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AN

INTRODUCTION

TO THE

PRACTICE

OF

MIDWIFERY.

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LICENTIATE IN MIDWIFERY OF THE COLLEGE OF PHYSICIANS.

IN TWO VOLUMES.

VOLUME THE FIRST.

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PREFACE.

MANY of these papers, which are now collected into two volumes, have been before printed, and of several of them there has been more than one impression. By this mode of publication I have had an opportunity of correcting many errors, though, with all that I have been able to do for the amendment of the work in general, I am yet very sensible of its imperfections. But the reader will discover that pains have been taken to render it less unworthy of his regard; and the hope of being useful to those who are engaged in studies of this kind has converted the trouble into pleasure. Very much yet remains to be done for the perfection of this branch of the profession, not by the presuming and vain-glorious, who are ever misleading us; but by men of industrious attention, capable of reducing the observations they will have many opportunities of making into order, and converting them to practical use and advantage.

Of the medical treatment of the diſeaſes peculiar to women, of the practice of midwifery in particular, we have no accounts from the earlieſt writers but ſuch as are very imperfect, and involved in works which the life of one man would ſcarcely be ſufficient to glean; and, after all his labour, his curioſity might be gratified, but he probably would not, at this period of time, gain for himſelf, or afford to others, much ſatisfaction. The cultivation of medicine at large, of that branch of which we are about to treat in particular, is of a late date in this country; which, to one glance of the eye, exhibits a view of the ſteps by which human beings emerge from a ſtate of abſolute ignorance and barbariſm, become civilized, and arrive at eminence in every art and ſcience.

In what country medical knowledge was firſt cultivated and reduced into ſcientific order, cannot now be traced; for, beyond a certain time, the records are crowded with fable, and, being only ſupported by conjecture, are not entitled to our confidence. But, long before the eſtabliſhment of ſyſtems, there muſt have been a time, when means were uſed for the cure of diſeaſes and the relief of accidents. There muſt alſo have been a time when the rude but well-meant endeavours of one friend

friend to relieve another in diſtreſs ceaſed, and application was made to thoſe who were ſuppoſed to have more information or greater ſkill; and this would properly be the origin of the art. By what ſteps or means the Greeks *became ſooner and better informed, in all arts and ſciences, than other nations, we cannot now decide; whether it depended upon the force of their own native genius, or whether this knowledge was communicated by ſome preceding or neighbouring people. It is probable that the* Greeks *were informed by the* Egyptians, *and theſe, as many contend, by the natives of* India; *but, by whatever means they acquired their information, to the* Greeks *the diſtinguiſhed glory is due of having conveyed, in their own language, the rudiments not only of medicine, but of almoſt every art and ſcience, to all the weſtern world. The very name of* Hippocrates *has filled with enthuſiaſm every ſucceeding writer; and all thoſe of whom we have been accuſtomed to think with veneration, or to ſpeak with reſpect, have mentioned him with admiration, and held him to our view as an example to be imitated, or as a pattern to be followed. Whether we conſider his writings with regard to the morality which they inculcate, the liberal conduct which they recommend, the ſtrong and*

extenſive obſervations with which they abound, or the order and method in which theſe are conveyed, it is not poſſible to withhold our eſteem. He had likewiſe the good fortune of writing in a language which was not only known, but ſpoken with claſſical purity for a longer time than any other; *for* Hippocrates *lived near five hundred years before the Chriſtian era, and the* Grecian *was the popular language at* Conſtantinople, *even at the time when this city was taken by* Mahomet *in the fifteenth century. The* Greeks *alſo maintained their ſuperiority in literature and arts for a long time after their political ſovereignty was loſt. But if there be any progreſſive power in the human mind, if there be any advantage obtained in the practice of medicine, by the knowledge of the circulation of the blood, or of a more correct anatomy and phyſiology at large, by the application of chemiſtry, by a more copious* materia medica, *by the records of experience, or by many collateral arts which medicine calls in to its aid, we may be allowed to ſay, that* Hippocrates *ought not to be conſidered as the guide of Phyſicians at the preſent time, or as having limited either the perfection or extent of the art*; *but as an illuſtrious ſpecimen of ancient medical knowledge and practice. And if this obſervation*

observation holds good with respect to Hippocrates, *it will have more force when applied to all his transcribers and commentators, who seem to have lost, in their attachment to him, the use of their own reason and judgment. To the* Greeks *we are indebted for the works of* Aristotle *in the time of* Alexander *the Great; and, when they were subdued by the* Romans, *the first object of their conquerors was, to acquire possession of their knowledge. With other arts and sciences, the* Greeks *are to be considered as the instructors of the* Romans *in medicine; and, allowing for some change in the arrangement, the addition of what he had collected from other writers, a few improvements in surgery, and the local application of principles before known,* Celsus, *who lived at* Rome *in the first century, may be considered as the transcriber of* Hippocrates.

The flourishing state of the Romans *was of short duration. The empire was divided into the eastern and western in the fourth century.* Rome, *which was the capital of the latter, was taken by* Odoacer, *king of the* Heruli, *under whose subjection it remained; and the* Romans *ceased to speak the* Latin *language in the beginning of the seventh century. But neither the*

conqueſt of Rome *by* Odoacer, *nor that of* Alexandria *under the Caliph* Omar, *nor the permanent ſubjection of* Conſtantinople *by* Mahomet *the ſecond in the fifteenth century, extinguiſhed that knowledge, and thoſe arts, which had been ſo long and ſo ſtrenuouſly cultivated and exerciſed. From the deſtruction of the library at* Alexandria *were produced the ſchools of* Antioch *and* Haran, *or what may be called the* Arabian *ſchools, the principal medical writers of which were* Rhazes, Avicenna, Avenzoar, *and* Albucaſis. *The ſentiments and manners of no people could be leſs favourable to learning than thoſe of the* Arabians; *and we accordingly find in every hiſtory, that, when they ſpoiled* Alexandria, *their intention was to deſtroy all kinds of ſcience, by burning the magnificent libraries which had been there collected; and every book which eſcaped the general havock was preſerved by the care or partiality of private men. The writings of the* Arabian *phyſicians were chiefly, though imperfectly tranſcribed from the* Greeks; *except that an account of the ſmall-pox, and of a few other diſeaſes of leſs conſequence, was firſt given by the* Arabians; *and that* Avicenna *was the firſt who deſcribed the* forceps, *an inſtrument*

ment contrived for the purpose of delivering women in cases of difficulty, preserving at the same time the life of the child.

After the destruction of the library at Alexandria, *the* Grecian *manuscripts, which were preserved, were also translated into the* Syriac, Persian, *and* Indian *languages; and the learned were dispersed in different countries. For it appears that in the year* 767, Almanzur, *the founder and Caliph of* Bagdat, *sent for a skilful and learned physician from* India; *which I mention, as it seems to explain an observation made by the* Raja *of* Kishenagur, *and reported by the learned Mr.* Halhed, *in the preface to his* Persian *Grammar, without any violence to other chronologies. Thus wars and apparent devastation became, in the hands of Providence, the means of diffusing learning over many countries which might otherwise have remained in ignorance.*

But the first schools from which the western part of Europe *derived their knowledge were established in* Italy *in the eighth century; and the most famous of those in which the art of medicine was taught were at* Padua, *where all who aimed at excellence resorted with the view of pursuing*

purſuing their ſtudies, or of qualifying themſelves for practice. From the contiguity of the two countries, from the frequent wars carried on between France *and* Italy, *or from other cauſes, the* French *acquired knowledge, ſchools were eſtabliſhed, encouragement was given to learning, many able men aroſe, and* France, *by its more convenient ſituation to* Britain *and the northern nations, in their eſteem, ſucceeded* Italy *in literary reputation; and* Paris *and* Montpelier *were the places to which ſtudents reſorted for inſtruction, even down to the beginning of this century.*

About fifty years before the birth of Chriſt, Julius Cæſar *made a deſcent from* Gaul *into* Britain, *a country then but little known, the inhabitants of which were in a very uncivilized ſtate; perhaps not one degree more enlightened than the* Indians, *whom their poſterity afterwards diſcovered in* America. *The* Romans *continued long enough in* Britain *to humble the ferocious ſpirit of the natives, to prepare them for civilization, and to teach ſome of thoſe arts by which the evils of their ſtate might be leſſened,*

and

and ſome of the comforts of life acquired. On the retreat of the Romans *from the iſland, ſuch of the natives as after an impotent oppoſition to their arms, and a rejection of their government, had been driven to the diſtant parts, poured with irreſiſtible fury on thoſe who had been ſubjected to the dominion of* Rome, *and the* Saxons *were called in to aſſiſt and to protect them. Subjection is uſually the lot of thoſe who receive political protection; the* Saxons *aſſumed the government of* Britain, *and being but little more civilized than thoſe they came to defend, could afford few opportunities of improvement; and the* Danes, *in their ſubſequent invaſions, reduced the ſmall advancement which the* Britons *had made towards learning, notwithſtanding the encouragement afforded by* Alfred, *about the year* 900. *The* Norman *conqueſt took place in* 1066, *and the change, with all its diſadvantages, was productive of ſome general good to the nation; but the great proſpect of literary improvement aroſe towards the concluſion of the twelfth century, when* Richard *the Firſt undertook his cruſade to the Holy Land. But it appears that there was not a ſingle man in his whole army who underſtood the* Grecian *or* Syrian *languages; ſo that without any advantage to balance the loſs*

of

of his ſubjects or the expenditure of his wealth, he and his people returned to England *as ignorant as they departed. During all this barren and dreary time, that is, for the ſpace of nearly thirteen hundred years, the excellence of the* Britons *ſeems to have been in the ſtrength of their arms, mention being ſcarce made of any man who had a claim to be conſidered as learned in any ſcience, before* Roger Bacon, *who lived in the thirteenth century. He was a man endowed with a very ſuperior genius, who, among other branches of philoſophy, applied himſelf to chemiſtry, which he carried to a higher degree of perfection than his predeceſſors of any age or nation, as well as laid the foundation of many modern improvements. A few other names of medical men are recorded, as* Richardus Anglicus, Nicholas de Ferneham, Johannes de Sancto Ægidio *or* Giles, Hugh *of* Eveſham, *and* Gilbertus Anglicus *; *but* John a Gaddeſden *was the firſt* Engliſhman, *according to Dr.* Friend, *who acquired ſufficient reputation to be appointed Phyſician to the Court, which* Gaddeſden *was, in the reign of* Edward *the Second. His work, which he called the "Roſa Anglicana," was never printed in* England:

* See Aikin's Biographical Memoirs.

and

and if it is compared with thoſe of the Greeks, *and perhaps of ſome other phyſicians of his time, he may deſerve the ſeverity of that cenſure which has been unſparingly paſſed upon him. But ſurely much allowance is to be made, and ſome honour muſt be given, to the firſt man in any country, who, by diſtinguiſhing himſelf, was preferred to a place of ſuch high truſt and importance. About the ſame time lived* John Ardern, *a Surgeon of great reputation at* Newarke *in* Nottinghamſhire, *who compoſed many works, none of which have been printed, except his treatiſe on the "Fiſtula in Ano."*

Knowledge muſt be introduced into every country in ſome one or more of theſe ways; it muſt be gained by the induſtry and genius of the natives; by communication with other nations in which it already exiſts; or the rudiments muſt be acquired in ſome other nation, and then carried to greater perfection by the induſtry and genius of thoſe, who originally received their inſtruction from foreigners. If knowledge was conveyed from the Babylonians *or* Indians *to the* Egyptians, *thoſe would probably afford an example of the firſt; the* Greeks *of the ſecond; and all Europe would be an example of the third. But the progreſs of knowledge would in the beginning be*

be exceedingly ſlow, in every nation; and even ſuppoſing the powers of the mind were not diverted from the purſuit by more favoured objects, it would be long before men thus circumſtanced could be put into competition with a people already informed. The abilities of particular men would very often be loſt by their death; and, if they were diſpoſed to convey their knowledge by writing, the number of copies would be comparatively few, full of the errors of the tranſcribers, and difficult to be underſtood, from the changes in the meaning of words, and the conſtruction of the language in which they might be written. Nor would a people deſerve the name of ſkilful and learned, becauſe there were a few men of diſtinguiſhed abilities among them, but becauſe the generality were ſo well informed as to be able to execute with aptitude what was required of them for the good of ſociety.

All or the greater part of the impediments to the acquiſition or diffuſion of knowledge in general, were happily removed in the fifteenth century by the diſcovery of the art of printing, by John Fauſt *or* Fuſt, *a* German, *about the year* 1432. *This art was introduced into* Britain *in the year* 1470, *by* William Caxton, *who hired himſelf as a ſervant at* Cologn, *for the purpoſe of*

of qualifying himself as a working printer. There are two books, it is said, which were printed by him before his return, of one of which we shall have occasion to take notice. Another event extremely favourable to the improvement of medicine took place early in the next century, that is, in the year 1518 ; *which was the establishment of the College of Physicians in* London, *by the charter of King* Henry *the Eighth. The words of the charter of the college denote its view*; Improborum hominum qui medicinam, *&c.*; audaciam compescere ; *and the kind of institution*, institutarum civitatum in Italia exemplum imitati ; *and the persons to whom it was granted*, gravium virorum doctorum, *&c.*; precibus inclinati. *For certain purposes, promoting the good of society, these men were directed to form a college, which must signify their selection ; with powers for their internal regulation, as forcible as those ever granted to any other university or college ; provided such regulations only were made and executed as promoted those interests of society which were committed to their trust. And I mention these circumstances because the selecting power of the Fellows of this College, though allowed to all others, has been disputed by some good men ; who perhaps did*

did not recollect that, before its eſtabliſhment, the art of medicine was practiſed without reſtraint, in this country, by men as bold as they were ignorant; nor foreſee that, if it was annulled, the art would, in all probability, decline into its primitive ſtate of ignorance and confuſion. It would moreover be eaſily proved, that ſince the year 1518 *there have been at all times phyſicians of diſtinguiſhed abilities and eminence, and that the general literature of this country has been in many inſtances very effectually aſſiſted by this College.*

One of the firſt books printed by Caxton *was "Bartholomeus de Proprietatibus Rerum." He is named in the firſt tranſlation, which was made under the protection of one of the Earls of* Berkley, *as* B. Glanville, *but the title of the copy of the book which I have, probably* Caxton's, *is this—"Incipit prohemium de Proprietatibus "rerum Fratris Bartholomei, anglici, de Ordine "Fratrum Minorum." This is in the nature of a* Cyclopædia; *and being a book not much known, I allow myſelf the liberty of making an extract from it, which will ſhew the nature of the work. His obſervations on fire, which will exhibit his philoſophy, are in this order—*De forma—De elemento—De igne—De flamma

De

De fumo—De carbone—De ſcintilla—De favilla—De cinere.—*The following from his chapter* de infirmitatibus *will ſhew his medicine.*—De febre—De febre effymera—De ethica—De febre putrida—De ſignis putridæ febris—De febre cotidiana—De febre terciana et ejus ſignis et cura—De quartana et ejus ſignis et remediis—De febre ſimplici et compoſita. *He has a chapter* de obſtetrice, *and another* de umbilico, *but they both relate almoſt wholly to the management of the child. A book like this promiſed to be of great ſervice; but, though the circle was large and regular, it was filled, not with the obſervations of a man of real knowledge or experience, but with popular opinions, and thoſe collected, without much diſcrimination, from other writers. A tranſlation of this work, by* John Treviſa, *was printed by* Wynkin de Worde *in* 1507, *another edition by* Berthelet *in* 1535, *and I believe ſeveral others. Very few medical books ſeem to have been printed about this time; and from the examples, their loſs is not to be regretted. The "Judycyall of Vryus" was printed in* 1512; "*A litel boke for the "infirmities and grete Sickeneſſe called Peſti-"lence;" which paſſed through many editions; and "A little Treatyſe called the Gouernail of*

"*Helthe.*" *But in the year* 1522 Linacre *publiſhed a tranſlation of different parts of* Galen, *which he thought moſt uſeful to be known. The ability with which theſe tranſlations were made is univerſally acknowledged, and great honour was juſtly given to* Linacre *on the occaſion. But the Engliſh practitioner did not reap much advantage from the work; for though there might not have been ſix men in the nation at that time able to read or tranſlate* Greek, *and probably ſome hundreds who underſtood* Latin, *yet the bulk of the people were ſtrangers to both the languages; and of this* Linacre *himſelf ſeems to have been ſenſible; for he immediately afterwards publiſhed his* "Rudimenta Grammatica Linguæ Latinæ." *Nor can I here help lamenting two defects even in* Linacre's *plan; one, when the college was eſtabliſhed, that he did not encourage the publication of papers on medicine, under the auſpices of the college; a defect ſeen by the eſtabliſhers of the Royal Society, who publiſhed ſuch papers in their tranſactions, a place by no means proper for them; the other, that he did not publiſh his works in* Engliſh, *when they would have been generally read, have afforded immediate inſtruction, ſtood as good examples, and*

taught

taught a proper method of writing. It was not done, and the Engliſh *medical writers returned to their former ſtyle; and for many years little real progreſs in knowledge was made, nor any titles heard of but thoſe of* Urynals, Judgment of Urynes, Anatomies of Urynes, Treſuries of Helth, Mirrours of Helth, Anthidotaries, Breuiaries of Helth, *the* Treſures of poore Men, Herbals, *and the like, by medycyners and aſtronomers. But about the year* 1540 *ſome attempts were made to tranſlate books of reputation into the* Engliſh *language; as Sir* Ulrich Hutten *on the wood called* Guaiacum *that healeth the Frenche Pockes, by* Paynell, *Canon of* Marten Abbey, *who had alſo tranſlated many other books about* 1533; *the* Caſtell of Helthe *by Sir* Tho. Elyot, *who was not a phyſician*; Albertus Magnus; Prognoſticacions out of the books of Ypocras, Auicen, *&c. and the* Queſtionarie of Cyrurgyens, with the formularie of Iytell Guydo in Cyrurgie. *In the year* 1540 *was alſo publiſhed the firſt book on the ſubject of midwifery in* England *, *called*

* *Dr.* Combe *has in his poſſeſſion the identical manuſcript copy of this work, which was preſented to* Catherine, *Queen of* Henry *the* VIIIth. *This copy is ſigned with the name of* —— Jonas, *but it does not appear why the book was afterwards publiſhed by* Raynold *in his own name.*

"*The Byrth of Mankynde*," *otherwiſe named* "*The Womans Booke*," *by* Thomas Raynold, *Phyſition*; *the ſecond edition of which was imprinted at* London, *by* Thomas Ray, *whoſe name is not mentioned either by* Ames *or* Herbert, *in their hiſtory of printers. This was alſo the firſt book which has prints taken from very neat drawings. As every one of theſe books went through ſeveral editions, we may conclude they were in high eſtimation. Then* (1545) *came forth alſo an abridgment of* Veſalius, *of which the copies are not ſcarce, under the title of*, "*Compendium totius Anatomiæ delineatio* "*ære Exarata, per Thomam Geminum, Lon-* "*dini.*" Geminie *was an engraver.*

But one of the firſt Engliſh *medical books, properly ſpeaking, I take to be* "*a ſhort and profitable treatyſe touchinge the cure of the diſeaſe called* Morbus Gallicus; *withe ann account of the nature of Quickſilver, by* G. Baker, *Maiſter of Chirurgerie*, 1579," *and the firſt book in ſurgery, called*, "*An Excellent Treatyſe of wounds made with Gunſhot, &c.*; *by* Thomas Gale, *Maiſter in Chirurgerie*, (1563.)" *The dedication to* Ambroſe Parè's *work is dated Feb.* 8, 1579, *and it was tranſlated into* Engliſh

liſh *in* 1634 *by* Thomas Johnſon; *ſo that it may be doubted whether* Gale *did not precede* Parè *in the recommendation of a more ſimple method of treating gunſhot wounds. The ſame* Tho. Gale *alſo printed,* "*An Encherridion of Chirurgerie,*" *and many other works relating both to ſurgery and medicine together with the* "*Inſtitution of a Chirurgeon.*" Gale *was a very meritorious and indefatigable ſurgeon. Near the ſame time* John Halle *publiſhed what he calls the* "*Chirurgia Parva Lanfranci;*" *and* John Banniſter "*a Treatyſe of Chirurgerie;*" *and ſoon afterwards* William Clowes "*A briefe and neceſſarie treatyſe touchynge the cure of the dyſeaſe called Morbus Gallicus, or Lues Venerea, by unctions and other approved waies of curing.*" *But there had alſo been publiſhed in the year* 1577, *a profytable treatyſe of the anatomie of man's bodie, compyled by that excellent chirurgeon,* M. Thomas Vicary, *Eſq. Sarjaunt Chirurgeon to* Edward *the Sixth, Queene* Marie, *and Queene* Elizabeth, *and alſo chiefe Surgeon of* St. Bartholomew's Hoſpitall. *There was alſo printed in* 1597, "*The whole courſe of Chirurgerie,*" *by* Peter Lowe, *a Scotchman, Aurelian doctour in the facultie of chirurgerie at* Paris, *which is quoted in the Critical Enquiry*

publiſhed about fifty years ago by Samuel Sharp, *one of the moſt expert and able ſurgeons this country ever produced. I find a few books publiſhed by phyſicians about this time.*—"*A ſhort* "*diſcourſe of the moſt rare and excellent Virtue* "*of Nitre*"—"*A Greene Foreſt, or a Natural* "*Hiſtorie,*" *by* John Mapler, *M A. and ſtudent at Cambridge*—"*The Hammer for the* "*Stone,*" *by* Walter Carie;—*and a brieſe treatyſe called* "Carie's *Farewell to Phiſicke*" —"*Stirpium Adverſaria Nova perfacilis in-* "*veſtigatio luculentaque acceſſio ad priſcorum* "*Materiam Medicam*"—"*The Benefit off the* "*anncient Bathes of Buckſtone, and the Bathes* "*of Bathes ayde; by* John Jones, *Phyſician*"— "*Hygeina, &c. authore* Timotheo Brighto, "*Cantabrigienſi Medicinæ Doctore:*" *and a Treatyſe of Melancholie, by the ſame author;* "*Praxis Medicinæ Univerſalis*" (1598), *and many others, which ſhew very ſatisfactorily the pains taken by the* Engliſh *to acquire knowledge by their own induſtry, and by tranſlating all the works which were then held in particular eſteem. But it appears alſo that the progreſs made by the* Engliſh *phyſicians and ſurgeons, for the improvement of the reſpective branches of the profeſſion, had not been very rapid, and that much remain-*

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ed to be done at the commencement of the ſeventeenth century; and particularly that the practice of midwifery had not been yet attended to, unleſs as a part of ſurgery.

In the year 1560, Francis Bacon, *afterwards Lord* Verulam, *was born, a man whoſe fame will receive no addition from any applauſe which it is in my power to give. He was a meteor from whoſe luſtre all nature received ſome light, and, though he did not apply himſelf particularly to the ſtudy of medicine, he has left many uſeful obſervations relating to it; and he promoted this, and almoſt every other branch of knowledge, by teaching and practiſing the only effectual method of acquiring it.*

In the year 1578 William Harvey *was born at* Folkſton *in* Kent; *and, having completed his ſtudies at* Cambridge, *he went to* Padua, *where he was admitted to the degree of Doctor in unuſual and flattering terms of approbation, in* 1602. *In the year* 1615 *he was appointed by the College of Phyſicians to read the lectures on anatomy and ſurgery; and in theſe he firſt promulgated his diſcovery of the circulation of the blood, a diſcovery ſo complete, that no perſon has ever controverted one poſition, or amended his explanation. With all the ſagacity and perſever-*

ance of a truly great man, he applied himself to form an entire history of the generation of animals, with that of the preceding and accompanying changes; but his studies were interrupted, and many of his papers lost, in the time of the civil war. It does not appear that he had determined to publish the rest, though finished with admirable correctness, till he was prevailed upon by the solicitations of his intimate friend Sir George Ent, *who supervised the printing of them, in* English, *in the year* 1653; *but I have no other authority for this fact than the preface to that edition. By inclination, or the necessity of his affairs,* Harvey *was engaged in the* Practice *of* Midwifery, *by which means he got that information which enabled him to write his* "Exercitatio de partu," *and many excellent observations upon that subject, with which his works abound. He clearly entertained an opinion that the knowledge of the circulation, the constituent parts, and properties of the blood, would enable physicians to cure all diseases. The discoveries which* Harvey *made, the many subjects which he illustrated, and the delicacy and patience which he exercised in his investigations, then unknown in this country, entitle him to the highest honour as an anatomist, and as a man of science.*

He

He died at eighty years of age, honoured and beloved for the greatneſs of his abilities, the ingenuouſneſs of his diſpoſition, and the mildneſs of his manners.

From the gradual progreſs of ſcience, or from the example of the two illuſtrious men laſt mentioned, a happier proſpect dawned upon Britain, *to which I muſt beg leave to call your particular attention* *.

Thomas Sydenham *was born in the year* 1624, *and graduated at* Oxford. *He applied himſelf to the practice of medicine, and wrote his account of the continued fever of the years* 1661, *and three following years; which fever he probably then ſuppoſed to be the only one in nature. But farther experience convinced him that there were many kinds of fever, and of theſe he has given an account to the year* 1683, *together with diſſertations on the ſmall-pox, hyſteric diſeaſes, dropſy, gout, and many ſporadic diſeaſes. Some notice is alſo taken of the diſeaſes incident to women in childbed, and of many of the complaints of children. His works were publiſhed at different times as the occaſions occurred to him. The writings of* Sydenham, *whether we conſider the ſagacity and order with which the ob-*

* *The greater part of this Preface was given as an introductory Lecture.*

ſervations

fervations are made, or the fidelity with which they are recorded, have been held by all ſucceeding phyſicians in the higheſt eſteem; and, from the time of Hippocrates *to the preſent, he has been deſervedly conſidered as the beſt example of a faithful obſerver and practical phyſician, though it muſt be acknowledged that he was often wrong in his theory, and in ſome inſtances in his practice; but his deſcriptions of diſeaſes are allowed to be excellent. He died in the year* 1689.

Francis Gliſſon *was educated at* Cambridge, *where he became* Regius Profeſſor. *He was one of the phyſicians to Queen* Elizabeth, *and to* James *the firſt. In* 1654 *he publiſhed his "Anatome Hepatis," in the internal ſtructure of which* viſcus *he made ſeveral new obſervations; in* 1659, *his "Tractatus de Rachitide," which diſeaſe he was the firſt who deſcribed; and after ſome years (in* 1676) *his book "De Ventriculo "& Inteſtinis," in which he firſt took notice of the irritability of the ſimple fibre; ſo that he has an undoubted right to the credit of being the father of all the doctrine of irritability, ſince unjuſtly attributed to* Haller, *and on which ſo many volumes have been written without the mention of* Gliſſon's *name. He alſo publiſhed a treatiſe "De Naturæ Vita," or* ſubſtantiæ energeticæ, *which he calls the* prodromus *of his*

Treatiſe

Treatiſe de ventriculo & inteſtinis, *but of this I have never ſeen a copy.* Gliſſon *lived to be upwards of one hundred years of age* *, *and died at* Streatham, *to which place he had retired.*

Thomas Willis, Sedleian *Profeſſor at* Oxford, *was born in the year* 1621, *and publiſhed, as the foundation of a large deſign, his* "*Cerebri* "*Anatome, cui acceſſit Nervorum Deſcriptio &* "*Uſus,*" *in* 1663. *In this work he was much aſſiſted by Dr.* Lower, *and the drawings were taken by the famous Sir* Chriſtopher Wren. *The terms in which* Willis *ſpeaks of* Lower *ſeem deſcriptive of both their characters*—cujus cultelli & ingenii aciem, lubens agnoſco—emicuit viri ſolertia plane admiranda, nec non indefatigabilis induſtria, nulloque obice ſiſtendus labor. *In* 1672 *he publiſhed his work* "*De Anima* "*Brutorum,*" *which is to be conſidered as a ſequel to the former. It is a work of infinite labour, reflection, and ingenuity, in which he deſcribes the cauſes and effects of thoſe diſeaſes ariſing from nervous influence. There are in this book four plates, three extremely fine, repreſenting a diſſected oyſter, a lobſter, and an earthworm.—In* 1673 *he publiſhed the firſt part of*

* *See the General Biographical Dictionary; or the Annual Regiſter for the year* 1767.

his

his "Pharmacentice Rationalis, ſive Diatriba "de Medicamentorum Operationibus in Humano "Corpore," a work compoſed of anatomical, phyſiological, and practical obſervations, with many curious plates of the lymphatics, vaſa vaſorum, and other finer parts of anatomy. He died before the ſecond part of this was printed; and in the preface to it there is a ſhort account of his life and writings. The works of Willis *are very numerous and uſeful, and bear indubitable marks of great learning, genius, and induſtry, but they are ſeldom ſtudied. Perhaps his medical works may be too philoſophical for practical phyſicians, and his philoſophical works too much blended with medicine to pleaſe philoſophers, but there is ſcarcely a ſubject relative to either on which light has not been thrown by Dr.* Willis: *for though he was very much engaged and eminent in practice, he conſtantly purſued the improvement of his profeſſion. He died in the year* 1675, *having founded a lectureſhip in the church of St.* Martin *in the Fields, where prayers are read early for the convenience of medical men. The practical works of* Willis *were badly tranſlated into* Engliſh *in* 1685, *and all his writings afterward, in a language never very good, and now become obſolete.*

Nathaniel

Nathaniel Highmore *wrote his* "*Diſquiſi-*
"*ones Anatomicæ*," *in* 1651, *and* "*A Hiſtory*
"*of the Generation of Plants and Animals*,"
in which it appears that he made many diſcove-
ries, particularly of the antrum *in the upper*
jaw; to which his name has ever ſince been
given.

Contemporary with theſe was Walter Need-
ham, *educated at* Cambridge, *but who after-*
wards reſided at Shrewſbury. *He wrote* "*Diſ-*
"*quiſitio Anatomica de Formato Fœtu*," *a work*
of deſervedly high eſtimation, in which he takes
the opportunity of treating not only upon the con-
tents and economy of the gravid uterus, *but upon*
the lacteals and lymphatic ſyſtem, and many other
anatomical ſubjects.

In the year 1656 Thomas Wharton *pub-*
liſhed his "*Adenographia*," *a work of eſtabliſh-*
ed reputation, in which, among other things, he
has obſerved many things which relate to the
gravid uterus. *This work is quoted in the firſt*
edition of Nuck.

Nathaniel Henſhaw *publiſhed his* "*Aero-*
"*Chalinos*" *in the year* 1677. *This contains*
the five following tracts:—"*On Fermentation*
"*---Chylification—Reſpiration---Sanguification*
"*---The good effects of changing Air.*"

About

About the same time lived Walter Charlton, *who published* "*Onomasticon Zoicum*" *in the year* 1668, *and in the following year his* "*Economia Animalis*," *of which Sir* George Ent *gave this character*—opus maturo consilio inchoatum, magna cura elaboratum, ingenio denique et doctrina singulari perfectum. Charlton *also published several other works, particularly* "*De causis Catameniorum et Uteri Rheu-*" "*matismo.*"

In 1668 *Dr.* Mayow *of* Oxford *published his work intitled* "*Opera omnia Medico-Physica*," *in the* German *edition.*

This work contains the following essays:—1. *De Sal-Nitro et Spiritu Nitro-aereo.*—2. *De Respiratione.*—3. *De Respiratione fœtus in utero & ovo.*—4. *De Motu Musculari & Spiritibus Animalibus.*—5. *De Rachitide. In these he treats of many other interesting and curious subjects which have lately been much approved, though the author seems to have been much neglected.*

Dr. Richard Lower, *before mentioned in the account of* Willis, *in* 1676 *published his* "*Tractatus de Corde, item de motu et colore San-*" "*guinis, et chyli in eum transitu.*"

This celebrated work has many observations

on

on the lymphatics, and the receptaculum chyli, *which he conſiders as their general centre, as early as* Pecquet. *He alſo made many curious anatomical and phyſiological experiments, and in this work aſſerts his claim as the inventor of the art of transfuſing blood.*

The Chirurgical Treatiſes of Richard Wiſeman *were dated in* 1676. *Theſe are allowed to have very great merit: and* Wiſeman *may, not unjuſtly perhaps, be conſidered as the firſt* Engliſh *ſurgeon—"The Comes Chirurgorum," containing Dr.* Read's *Lectures, was printed in* 1686.

Dr. Nehemiah Grew *publiſhed ſeparately, though they were afterwards collected into one volume, his "Anatomy of Plants," in which there are many obſervations reſpecting the ſolutions of ſalts; his "Anatomy of Roots—Comparative Anatomy of Trunks," between the years* 1670 *and* 1680—"*Coſmologia Sacra,*" *and ſeveral other works.*

At the ſame time lived John Ray, *the celebrated Botaniſt.*

Clopſton Havers *publiſhed his "Oſteologia Nova," in* 1690.

In this work he deſcribed the mucous glands of the joints, which he diſcovered, and the internal

nal ſtructure and diſeaſes of the bones, cartilages, &c.

In the year 1695 Ridley *publiſhed his* "*Anatomy of the Brain*," *of which he is ſaid to have diſcovered the lymphatic veſſels; and his* "*Obſervations*," *in which he treats on ſeveral abſtruſe parts of anatomy.*

Dr. Richard Morton *publiſhed his* "Phthiſiologia" *in* 1689; *his* "*Pyretologia ſeu de* "*morbis acutis Univerſalibus*" *in* 1691; *and his work* "*De febribus Inflammatoriis*" *in* 1694. Sydenham's *treatment of Fevers was almoſt univerſally antiphlogiſtic*; Morton's, *on the contrary, was cordial and ſudorific; but we have between theſe two writers all the arguments which have been advanced in favour of either method of treatment.*

The firſt edition of Cowper's "*Myotomia Reformata*" *was publiſhed in* 1695; *and* Keil's *Anatomy in* 1698.

By the writings of theſe very eminent men, and of many others whom I might have named, particularly of the celebrated Robert Boyle, *it appears that the phyſicians of this country were then indefatigable in the acquiſition and improvement of ſcience; that they were not only acquainted with the general knowledge of the* Greeks,

Greeks, Romans, Arabians, Italians, *and* French, *but might fairly be put in competition with thoſe of any other nation, if they did not excel them; and that all the changes we have ſeen, were produced in leſs than two hundred years, that is, from the time when the College of Phyſicians was eſtabliſhed, in the year* 1518, *to the termination of the ſeventeenth century.*

I muſt in this place beg leave to make a digreſſion. In the year 1668 Herman Boerhaave *was born near* Leyden. *He was originally deſigned for the church, but was led by inclination, and the ill ſtate of his own health, to apply himſelf, when very young, to the ſtudy of medicine. He graduated in the year* 1693, *was choſen Lecturer on the Inſtitutes of Medicine in* 1701, *and enjoyed all the honours which the univerſity could beſtow, or the city of* Leyden *confer upon him. He raiſed the reputation of this ſchool of medicine beyond that of any other in* Europe. *The induſtry of* Boerhaave, *in the purſuit of knowledge of every kind, is almoſt incredible; that of any other man compared with his may be called amuſement; the facility with which he communicated this knowledge to others was beyond expreſſion happy; and his whole conduct in*

every religious, moral, and ſcientific view, to the higheſt degree laudable. He was honoured in his life, and his memory is univerſally reſpected. His hiſtory, which was written by Dr. Samuel Johnſon, *muſt ever remain a moſt uſeful ſtudy to medical men, and an example of fine compoſition.* Boerhaave *died in the year* 1638.

Among the favourite ſtudents of Boerhaave *was* Alexander Monro, *who in the year* 1719 *returned from* Leyden *to* Edinburgh, *a city at that time not diſtinguiſhed by any eminence in medicine. But in the following year Dr.* Monro *being choſen Profeſſor of Anatomy and Surgery, and Dr.* Alſton *of Botany, they began to give Lectures, and by their abilities ſoon acquired that high reputation which enabled them to eſtabliſh a ſchool of medicine, which they had the very great ſatisfaction of raiſing to an equal degree of honour with that of any preceding or preſent time. Dr.* Monro *died in the year* 1767, *leaving behind him many valuable works, which were afterward collected into one volume and publiſhed by his ſon Dr.* Donald Monro. *By this eſtabliſhment, the further advantage was gained to* Britain *of having at* Edinburgh *a ſucceſſion of very able and eminent men, who dedicated the chief part of their time to the acquiſition and improve-*

improvement of medical ſcience, and to the inſtruction of thoſe who were intended for the profeſſion.

Here I ſhall conclude theſe general obſervations, and confine myſelf to ſuch only as relate to the practice of midwifery.

The "Byrth of Mankynd, or the Woman's "Book," with ſketches not badly intended or engraved, was printed in the year 1540: *and as it went through many editions, and as I find no other book of equal value publiſhed about that time, I conſider it as having been the popular book for near one hundred years; that is, till the year* 1634, *when all the works of* Ambroſe Parè *were tranſlated in one volume.* Parè *was a man of much experience, ſome erudition, and not a little credulity, but he made many uſeful obſervations relative to midwifery. In the year* 1653 Harvey's *Exercitations were publiſhed in* Engliſh, *but whether tranſlated or original I cannot decide. About the ſame time alſo lived Dr.* Chamberlen, *a very celebrated phyſician, who applied himſelf to this branch of the profeſſion* *.

* *A very elegant monument was erected in* Weſtminſter Abbey *to this Dr.* Chamberlen *by the Duke of* Buckingham, *of whom he has alſo in his Eſſays given a very amiable character.*

He had three ſons, who with their father, were ſuppoſed to have a better method of relieving women in caſes of difficult parturition than any other perſon, by means of an inſtrument ſaid to be the forceps, *but which I believe to have been a* vectis. *One of the ſons went over to* Paris *with a view of ſelling the ſecret, or of making a fortune by practice; but being foiled in the firſt caſe to which he was called, and ſuffering more obloquy than he deſerved, he returned to* England, *and immediately publiſhed a tranſlation of* Mauriceau's *work, which remained for many years in very high eſteem. This was in the year* 1672.

Having been favoured by Dr. Kirkland *with a manuſcript written by Dr.* Percival Willughby, *who lived at* Derby, *and afterwards in* London, *I am able to give the reader ſome idea of the practice of that time, many of the caſes being dated from* 1640 *to* 1670. *This work is entirely practical, and was intended to be publiſhed for the uſe of midwives, there being a title page, and two copies with variations.*

His preface is in this manner:

" *I haue read many bookes, with all the late* " *writers in midwifery, and I do perceiue that*

" *they all followe one common roade, taking* " *their ſeueral ſcheemes and figures one from* " *another.*

" *In ſeueral of theſe ſcheemes uarious things* " *may be perceiued which will be trubleſome to* " *the labouring woman, which a judicious prac-* " *ticioner will not followe. Let midwiues mark* " *whatt hath been written in my obſeruations,* " *let them conſider diligently the ſuerall reportes* " *not faigned, or the ſurmiſed thoughtes, nuc-* " *tors, or man's fantaſie, ſitting and meditating* " *in his ſtudye, but which really haue been per-* " *formed in the trauailing woman's chambre.*

" *From mine and their directions let midwiues* " *chooſe the beſt and facileſt waies of relieuing* " *women in affliction, and to decide all diſputes,* " *let reaſon be the judge, tet experience argue* " *the dubious points of practice; and, after a* " *full debate, let unſpotted truth recorde to ſuc-* " *ceedinge times what is moſt fitt to be followed* " *and uſed, &c.*"

This is a ſpecimen of his illuſtration. " *Let* " *midwiues obſerue the waies and proceedinges* " *of nature for the production of her fruit on* " *trees, or the ripening of walnutts and al-* " *mondes, from theire firſt knotting to the open-*

" *ing of the huſkes and falling of the nutt; the*
" *green huſkes ſticking ſo cloſe that it is not*
" *poſſible to ſeparate the huſke from the ſhell,*
" *whileſt it is unripe; but as the fruite ripeneth*
" *the huſke choppeth and with a fiſſure openeth,*
" *and by degrees ſeparateth the fruite without*
" *any enforcement.*

" *An egge repreſenteth the wombe: now the*
" *henne with keeping the egge warme doth breed*
" *the chicken, which when it comes to matu-*
" *ritie doth chip the ſhell, and is by degrees*
" *hatched without injurie. Theſe ſignatures*
" *may teach midwiues patience, and perſuade*
" *them to let nature alone to performe her owne*
" *worke, and not to diſquiet women by their*
" *ſtrugglings, for ſuch enforcements rather hin-*
" *der the birthe than any waie promote it, and*
" *oft ruinate the mother and uſually the childe;*
" *and let midwiues knowe that they bee natures*
" *ſeruantes, &c.*" Willughby's *practice is very little different from that of the preſent time. He divides labours into two kinds only, natural and unnatural. The particular rules I cannot pretend to deſcribe in this place; but the following letter, which he has quoted from a ſcarce work, correſponds ſo nearly with an obſervation*

it

it was my fortune to make, some years before I saw this manuscript, that I may be excused relating it.

" *Referam hoc casu, quid beatæ meæ conjugi*
" *acciderit. Tertio fœtu gravidam, nono præg-*
" *nationis mense, labores parturientium arripi-*
" *unt circa noctem. Mox rupta aqua (ut hic*
" *mulieres loqui amant) extra genitale, infan-*
" *tuli manus propendit. Ubi obstetrix adve-*
" *nisset, uxorem meam in sedili collocavit, eam-*
" *que ad continuos conatus (me nolente nec in-*
" *stigante natura) adegit. Cum vero res eo*
" *modo non succederet, meamque conjugem su-*
" *pra sedem continuo detineret, ac diris crucia-*
" *tibus illapsum ex uteri cervice manum brachi-*
" *umque retrudere niteretur, quo fœtum ad ex-*
" *itum commodius disponeret. Ego præ dolore*
" *charæ meæ conjugis impatiens, ac indesinen-*
" *ter obstetricem admonens, ne quidem elapsi*
" *membri reductionem in uterum cogitaret possi-*
" *bile, multo minus moliretur, secundam obste-*
" *tricem accersiri jussi, præsertim cum uxor*
" *mihi nunciaret, quod obstetrix eam dilaceraret*
" *per illam præconceptam ac miseram elapsi*
" *membri repulsionem. Cum insequenti die,*
" *manè, obstetrix altera venisset, illa manus ad*

" *opus applicans remque diligenter explorans,*
" *uxorem meam in lectum deposuit, mandavit-*
" *que ut se quietam detineret, nullosque conatus*
" *excitaret, nisi quando natura eam sui admo-*
" *neret officii.*

" *Interim obstetrix illa prudens et expertissima*
" *prædixit mihi amicisque præsentibus, uxorem*
" *meam non ante parturam, quam fœtus in*
" *utero, ex indebito situ, conatibus strangula-*
" *retur, quod eventus docuit. Multiplicati sunt*
" *labores parturientis, et fœtus inflexo ad dor-*
" *sum capite, (salva matre) prodiit in lucem*.*"

By a manuscript in the possession of —— Kearney, *Esq. it appears that this Dr.* Willughby *was one of the six sons of Sir* Percival Willughby, *and grandson of Sir* Francis, *so famous in the time of Queen* Elizabeth.

It is probable that the fortune and eminence acquired by the supposed advantages of the method of the Chamberlens, *which they reserved as a secret, might be the occasion that many gentlemen engaged in practice, endeavoured to establish themselves upon the same principles, that is, of con-*

* Novus exortus hominis et animalium. ANTON. EVERARD.

cealing

cealing the means they uſed; of which claſs was Dr. Bamber. *Others might attempt to gain equal reputation and fortune by the very contrary means, that is by decrying the uſe of inſtruments of every kind, on any occaſion; for about the year* 1723, *Dr.* John Maubray *publiſhed a volume upon this ſubject called "The Female Phyſician, "or the Whole Art of New improved Mid-"wifery," in which he exclaims with great vehemence againſt their uſe. In the following year he alſo publiſhed an appendix under the title of "Midwifery brought to Perfection," in which he demands great credit for the many improvements he had made. This appendix is in truth no more than a* Syllabus *of his Lectures, a courſe of which conſiſted of twenty, twelve anatomical and phyſiological, and eight practical. I believe it would be unjuſt to deny to* Maubray *the credit of having been the firſt public teacher of Midwifery in* Britain. *He gave his Lectures at his houſe in* Bond-ſtreet.

In the year 1719 Dionis' *Midwifery was tranſlated into the* Engliſh *language; and in the year* 1729 Deventer's *work was tranſlated and publiſhed, and though it appears that rather more credit has been given to this author than he deſerved, as he enters upon a diſcuſſion of the*

cauſes

cauſes of many difficulties which occur in practice, and of the means of relieving them, and as he was generally averſe to the uſe of inſtruments, Deventer's *work may be eſteemed a conſiderable addition to the ſtock of obſtetric knowledge in this country.* Deventer *was originally a watch-maker.*

Dr. Simſon *Profeſſor at* St. Andrew's *publiſhed in* 1729 *his "Syſtem of the Womb," a work of ſufficient ingenuity, but not of much uſe in practice, even if his theory had been true.*

About the year 1733 Edmund Chapman *publiſhed his "Treatiſe on the Improvement of Mid-"wifery," in which there are ſeveral uſeful ob-ſervations; and other writings of temporary con-ſequence only.* Chapman *was the ſecond public Teacher of Midwifery in* London, *and he was the firſt alſo who deſcribed the* Forceps, *in the third volume of the* Edinburgh *Medical Eſſays.*

In the year 1734 *Dr.* Hody *publiſhed a "Collection of Caſes in Midwifery," written by Mr.* William Giffard. *Theſe caſes, two hun-dred and twenty-five in number, ſeem to be writ-ten with great fidelity, and as they occurred in his own practice, they were leſſons of conduct which*

ought

ought to be purſued in ſimilar caſes, and may now be conſidered as examples of the ſtate of practice at that time. Giffard *alſo gave a plate repreſenting the* Forceps, *and was, I believe, among the firſt who aſſerted that the* placenta *might be attached over the* os uteri.

"*The Midwife rightly Inſtructed,*" *was publiſhed in the year* 1736 *by* Thomas Dawke; *and the* "*Midwife's Companion*" *by* Henry Bracken, *in the following year, with ſome other things equally unimportant.*

About this time lived Richard Manningham, *who quitted the profeſſion of Pharmacy and applied himſelf with great aſſiduity to the practice of Midwifery. In a pamphlet, publiſhed in the year* 1730, *he is mentioned as having been knighted. In the year* 1739 *he eſtabliſhed a ward or ſmall hoſpital in the parochial Infirmary of* St. James, Weſtminſter, *for the reception of parturient women, which was the firſt thing of the kind in the* Britiſh *dominions. At this ward, which was ſupported by public ſubſcription, he gave lectures, and the ſtudents had opportunities of being qualified for practice. He publiſhed a* "Compendium artis obſtetriciæ;" *a* "Treatiſe on the Febricula;" *on the* "*Uſe and Abuſe of Phyſick,*" Aphoriſmata Medica, *and many other*

other eſſays, relating chiefly to the practice of Midwifery. Sir Richard Manningham *was a man of much learning and information, eminent and ſucceſsful in practice, and very humane in the exerciſe of his art. He died about the year* 1750.

Sir Fielding Oulde *of* Dublin, *in the year* 1741, *publiſhed a "Treatiſe of Midwifery," the moſt intereſting parts of which are his obſervations on the continuance of the thickneſs of the* Uterus *during pregnancy, and his deſcription of the manner in which the head of a child paſſes through the* pelvis *at the time of birth; the truth of which obſervations has ſince been fully proved and acknowledged.*

Having taken this ſhort and imperfect view of the progreſs of Midwifery in this country, from 1540 *to the year* 1740, *it will be prudent to conclude. For at that time the* Engliſh *might be ſaid not only to have purſued, but to have been in full poſſeſſion of the ſubject; all the books written in the neighbouring countries being tranſlated, public lectures given, and an hoſpital eſtabliſhed for the further improvement of the art, and the teachers being men of eminence. As all the books printed ſince that time may be readily procured, every gentleman has an opportunity of forming his own opinion*

of

of their reſpective merits. But the College of Phyſicians having been pleaſed, in the year 1783, *to form a rank, in which thoſe who dedicate themſelves to the practice of Midwifery ſhould be placed, I truſt that future accounts will be more correct; and that this meaſure adopted by the College will promote the public benefit, by confining the induſtry and abilities of one claſs of men to this branch of the profeſſion. It is my earneſt wiſh to ſupport their views in this wiſe and benevolent arrangement, as the fruits of which, I do intreat Doctor* Thomas Giſborne, *Preſident of the College of Phyſicians, not leſs dignified by his learning, and the integrity and liberality of his principles and conduct, than by his rank in the profeſſion, to accept theſe two volumes, offered, with all reſpect, by*

his moſt obedient

and obliged ſervant,

THO. DENMAN.

London, February 23, 1794.

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INTRODUCTION

TO THE

PRACTICE OF MIDWIFERY.

CHAPTER I.

SECTION I.

ON THE PELVIS.

THE anatomical and phyſiological knowledge of all the parts concerned in parturition is indiſpenſably neceſſary for thoſe who mean to excel in the practice of midwifery; even that of the whole body may, on various occaſions, be employed with advantage. In the inveſtigation of every ſubject there muſt however be ſome point of commencement, and, as there is much uſe and propriety in the method hitherto purſued by ſyſtematic writers, I ſhall follow their example, and give, in the firſt place, a deſcription of the ſituation, ſtructure, connexion, uſe, and diſeaſes of theſe parts; beginning with the *pelvis*, which is of great importance, on account of the direct influence

which it has upon labours, and becauſe it may be eſteemed the foundation on which all the other parts are ſuſtained.

The term *pelvis* has been indiſcriminately given to the inferior part of the cavity of the *abdomen*, and to the bones which form the cavity; but it appears more eligible to confine the term to the bones, and to call the ſpace between them the cavity of the *pelvis*.

The *pelvis* in the adult ſtate is compoſed of four bones: the *ſacrum*, the *os coccygis*, and the *oſſa innominata*.

The *ſacrum* is ſituated at the poſterior and inferior part of the trunk of the body, and ſerves as a baſis for the ſupport of the ſpine, of which it is an imperfect continuation. Its figure is that of an irregular triangle, with the ſhorteſt ſide placed upwards. The anterior ſurface is ſmooth and flat, and has a conſiderable degree of inflection or curvature, called the hollow of the *ſacrum*, by which the cavity of the *pelvis* is much enlarged. The poſterior ſurface is convex and uneven, to which ſome of the muſcles of the ſpine and thigh are attached.

In the infantile ſtate, the *ſacrum* is compoſed of five, and in ſome ſubjects of ſix bones, called

called falſe *vertebræ*, cemented together by intervening cartilages, which in the adult become bone; leaving little ridges or lines on the anterior ſurface, indicating the parts where they had been ſeparate. Theſe bones diminiſh in their ſize as they deſcend, ſo that the loweſt, which makes the point of the *ſacrum*, ſcarcely maintains the character of one of the *vertebræ*.

The articulation of the upper part of the *ſacrum*, with the laſt of the lumbar *vertebræ*, is ſimilar to that of the *vertebræ* with each other; but, by the manner in which the *ſacrum* and *vertebræ* are joined, the latter inclining over the former, an obtuſe angle is made, called the great angle of the *ſacrum*.

Through the *ſacrum* there is a canal for the reſidence and ſecurity of the *medulla ſpinalis*; but the poſterior part of the canal is incomplete below the third bone, a ſtrong ligamentous ſubſtance ſupplying the place of bone. That part of the *medulla* which is contained in the *ſacrum* is called the *cauda equina*.

On the anterior part of the *ſacrum* there are four pair of holes or perforations, or more, according to the number of bones of which the *ſacrum* was originally compoſed, through

which large nerves paſs for the uſe of the parts contained in the *pelvis* and of the inferior extremities. On the poſterior part of the *ſacrum* there is an equal number of perforations diſpoſed in the ſame longitudinal order; but they are leſs than thoſe on the anterior part, and covered by membranes, which allow ſmall nerves to paſs through them.

The *ſacrum* is of a very cellular texture, and is ſaid to be lighter than any other human bone of equal magnitude.

The lateral parts of the *ſacrum* form a broad unequal ſurface, by which it is connected with intervening ligament and cartilage, to another uneven ſurface at the poſterior part of the *oſſa innominata*. The inequalities of theſe ſurfaces, receiving and being received by each other, contribute very much to the firmneſs of the union of theſe bones. An *anchyloſis* is not unfrequently formed between the *ſacrum* and *oſſa innomanata*; and ſometimes in conſequence of their ſeparation an imperfect joint, which very much weakens that part, and impairs the manner of walking for the remainder of life.

To the inferior extremity or point of the *ſacrum* is ſubjoined the *os coccygis*, which has by

by ſome writers been conſidered as a diſtinct bone, and by others as an appendage to the *ſacrum*; and theſe form, by the manner of their union, an obtuſe angle, called the little angle of the *ſacrum*. In infancy the *os coccygis* is cartilaginous, but in adult age it is compoſed of three, or, more frequently, of four bones, connected by intermediate cartilages, the uppermoſt of which is ſomewhat broader than the lower part of the *ſacrum*. In ſome ſubjects theſe bones coaleſce and form a ſingle bone; and in others an *anchyloſis* is formed between the *ſacrum* and *os coccygis*; in conſequence of which the latter is ſhortened and turned inwards, ſo as to obſtruct the head of the child in its paſſage through the *pelvis*. But the impediment thereby occaſioned at the time of labour may be overcome by the force with which the head of the child is propelled, and the *os coccygis* again ſeparated from the *ſacrum* with a noiſe loud enough to be diſtinctly heard, of which I have known more than one inſtance. In general however, between the bones of which the *os coccygis* is compoſed, ſome regreſſive motion is preſerved; and that which is produced between the *ſacrum* and *os coccygis*, when the latter is preſſed by the head of a

child paſſing through the *pelvis*, occaſions a conſiderable temporary enlargement of the inferior aperture of the *pelvis* *. The inſertion of the *coccygæi* muſcles, of a part of the *levatores ani*, and of portions or ſlips of the ſacroſciatic ligaments into the ſides of the *os coccygis* keep it ſteady, and prevent any lateral motion.

The *oſſa innominata* are the broad large bones which form the forepart and ſides of the *pelvis*, and the lower part of the ſides of the *abdomen*. In children each of theſe bones is compoſed of three; and, though they afterwards become one, the lines of original diſtinction may be obſerved at the *acetabulum*, or ſocket, which receives the head of the thigh bone. While the bones are diſtinct they have peculiar names, the *ilium*, the *iſchium*, and *pubis*, which names it is neceſſary to retain in the adult ſtate, that we may be able to deſcribe with more accuracy each individual bone, or allude to it in the deſcription of the adjoining parts.

* *Os coccygis adeo extrorſum ſæpe vertitur ut integros deinde annos conquerantur de dolore, in partibus his reſiduo.* Ruyſch, Adverſ. Dec. 2.

The

The *ilium* is the largeſt and uppermoſt of the bones which form the *oſſa innominata*. It is flat, broad, unequally convex and concave; in ſome parts round, and in others of an irregular ſquare figure. It is divided by anatomiſts into the *criſta*, *baſis*, anterior and poſterior edge, and the two ſides, external and internal.

The upper part, which has a thick arched border, is called the *criſta*. The anterior and middle part of it is convex outwardly, and the poſterior ſomewhat convex inwardly. The *criſta* has originally on its verge an *epiphyſis*, of which there are often marks to an advanced age.

The *baſis* or inferior part of the *ilium* is thick and narrow. It forms anteriorly a portion of the *acetabulum*, or ſocket, which receives the head of the thigh bone; and poſteriorily a large ſhare of the circumference of the *iſchiatic ſinus*, which is completed by the *iſchium* and ſacroſciatic ligaments.

The anterior edge of the *ilium* has two eminences, called ſpines, diſtinguiſhed as ſuperior and inferior, between which there is an excavation or notch, and another below the inferior ſpine.

The poſterior edge is ſhorter and thicker than the anterior, and terminates with two protuberances or ſpines, between which there is alſo an excavation.

The external ſide of the *ilium* is convex on the fore, and concave on the back, part. The internal ſide is irregularly concave; and upon that ſurface which is connected with the *ſacrum* there are ſeveral irregularities. From the upper part of this ſurface there runs a prominent line, which forms a margin, defining the upper aperture of the *pelvis*.

The *iſchium* forms the loweſt portion of the *oſſa innominata*. Its parts are deſcribed under the names of body, tuberoſity, or obtuſe proceſs, and *ramus*.

The body of the *iſchium* forms the loweſt and largeſt part of the *acetabulum*, and ſends out a ſmall *apophyſis*, which projects backwards and inwards, and is called the ſpine or ſpinous proceſs of the *iſchium*.

The tuberoſity or obtuſe proceſs of the *iſchium* is very thick and uneven, and is turned downwards. As it is the part on which the body reſts when we ſit, it hath alſo been called *os ſedentarium*. The convex portion was originally an *epiphyſis*; and, from the remains of the tendons and liga-

ligaments which were affixed to it, has, in the freſh ſubject, a cartilaginous appearance.

The *ramus* is a flat thin proceſs or *apophyſis*, proceeding from the curvature of the tuberoſity, aſcending and joining to a ſimilar but ſhorter proceſs, which ſprings from the anterior and inferior part of the *oſſa pubis*. The *ramus* of the *iſchium*, aided by this ſhort proceſs, forms a large part of the outline of that opening called the *foramen magnum iſchii*. This opening in the recent ſubject, is filled up by a ſtrong ligamentous membrane, which gives riſe to the external and internal muſcles called *obturatores*.

The *oſſa pubis* contribute the ſmalleſt ſhare towards the formation of the *oſſa innominata*. Each of them has been deſcribed in three parts, the body, the angle, and the *ramus*.

The body is that part which is placed tranſverſely before the anterior part of the *ilium*, to which it is united, forming by this union the oblique eminence, which diſtinguiſhes on the inner part of the *pelvis* theſe two portions of the *oſſa innominata*. The body of the *pubis* contributes alſo to the formation of the *acetabulum*. The upper edge has on its inner part an oblique ridge, which is called the *criſta*,

criſta, and is continuous with that of the *ilium* beforementioned, as defining the margin of the *pelvis*.

The anterior part of the *pubis* is called the angle, and conſtitutes that ſurface, which, being joined to the oppoſite bone, forms the *ſymphyſis* of the *oſſa pubis*. This part of the bone is flat and thin. The *oſſa pubis* connected together form on the external or inferior ſide an unequal concavity; but on the internal or ſuperior ſurface they are pretty equally convex, and both the edges have a ſmall degree of flexure outwards.

The *ramus* is a flat, thin, ſhort *apophyſis*, which, running obliquely downwards, unites with that of the *iſchium*. The two *rami* of the *iſchia* and of the *oſſa pubis* form on the interior and inferior part of the *pelvis* an arch, which is uſually called the arch of the *pubis*. This arch is much larger in women than in men; which circumſtance is favourable to the emergence of the head of the child at the time of birth, and conſtitutes the moſt diſtinguiſhing mark between the male and female *pelvis*.

SECTION

SECTION II.

THE advantage to be derived from the knowledge of the bones of the *pelvis*, in a dried or ſeparate ſtate, is not very evident. But we may conſider the previous intelligence of this and ſome other parts of our ſubject, as eſſentially uſeful and neceſſary, becauſe it comprehends the rudiments of a more perfect knowledge than can be otherwiſe acquired; we ſhall therefore proceed to examine the manner in which theſe bones are connected.

To the two lateral ſurfaces of the *ſacrum* are joined the poſterior ſurfaces of the *oſſa innominata*, and theſe are covered with a thin intervening cartilage, or ligamentous cartilage; the inequalities, as was before obſerved, contributing very much to the firmneſs of the junction. The *oſſa innominata* are alſo joined at the interior part by a thin cartilage, which covers the ſcabrous end of each bone, and the ſpace between them is filled up with a ligamentous ſubſtance. This connexion is called the *ſymphyſis* of the *oſſa pubis* *.

* See a ſhort but very preciſe account of the connexion of the bones of the *pelvis* by Dr. William Hunter.

Medical Obſervations and Inquiries, Vol. II.

Within

Within the circuit of the *pelvis* the *perioſteum* is thickened at the parts where the *oſſa innominata* are joined to the *ſacrum*, and at the *ſymphyſis* of the *oſſa pubis*. The *ſymphyſis* has alſo been deſcribed as connected by a thin tranſverſe ligament, or by ligaments which form what may be conſidered as a capſular ligament, adhering to the part which it encloſeth, and to which it giveth the principal ſtrength. Greater ſtability could not be procured by any internal mode of union, without a diminution of the cavity of the *pelvis*.

But on the external parts of the *pelvis*, where the union of the bones could be more firmly eſtabliſhed by a ligament, there is no point where one is omitted; even the tendons of the muſcles inſerted into the projecting parts of the bones, though particularly deſigned for other purpoſes, eventually contribute to the ſtrength of the *pelvis*.

From the poſterior edges of thoſe ſurfaces of the *oſſa innominata* which are joined to the *ſacrum* ſtrong ligaments paſs, which bind theſe bones firmly together; and all that unequal ſpace behind them is filled up with ſmall muſcles, or the ſmall parts of large muſcles, in ſuch a manner as to give in the freſh

freſh ſubject, when covered by their tendinous expanſion, a ſurface almoſt ſmooth.

From the obtuſe proceſſes of the *iſchia* ſtrong ligaments ariſe, which, expanding, paſs to the poſterior edges and *apophyſes* of the *ſacrum*, detaching in their paſſage ſmall portions to the *os coccygis*. Theſe ligaments are called the broad or external ſacroſciatic. From the ſpinous proceſſes of the *iſchia* ligaments ariſe, which, croſſing and adhering to the ligaments before deſcribed, paſs to the inferior and inner edge of the *ſacrum* and the upper part of the *os coccygis*, ſending ſlips or ſmall portions to the edges of this bone through its extent. Theſe are called the internal ſacroſciatic ligaments.

SECTION III.

By the knowledge of the parts where, and the manner in which, the bones of the *pelvis* are connected together, we are enabled to explain many uneaſy ſenſations which women have, and many infirmities to which they are liable

liable at the time of pregnancy and after their delivery.

It was for many centuries a received opinion, that theſe bones, though joined together in ſuch a manner as ſcarcely to afford any ſuſpicion of a ſeparation, were always ſeparated at the time of parturition; or that there was a diſpoſition to ſeparate, and an actual ſeparation, if the neceſſity of any particular caſe required that enlargement of the cavity of the *pelvis*, which was conſequent to it. The degree of ſeparation was alſo ſuppoſed to be proportionate to ſuch neceſſity; and if it did not take place, or not in ſuch a degree as was required, diſtending inſtruments were contrived and uſed to produce or increaſe it: and upon the ſame principle the ſection of the *ſymphyſis* of the *oſſa pubis*, of which we ſhall hereafter ſpeak, hath been lately recommended. This opinion ought probably to be aſſigned as one reaſon, for the ſuperficial notice taken by the early writers in midwifery, of thoſe difficulties which are ſometimes found to occur at the time of parturition, from the ſmallneſs or deformity of the *pelvis* *. To this

* Edoctus aſſero, oſſa pubis ſæpe ab invicem in partu laxari, emollito eorum cartilaginoſo connexu, totamque hypo-

this may alſo be referred much of the popular treatment of women in child-bed, and many popular expreſſions in uſe at the preſent time. But this opinion hath been controverted by many writers, who aſſert, that there was neither a ſeparation nor a diſpoſition to ſeparate; but that when either of them did happen, they were not to be eſteemed as common effects attendant on the parturient ſtate, but as diſeaſes of the connecting parts *. The diſputants on each ſide have appealed to preſumptive arguments, and to facts, proved by the examination of the bodies of thoſe who have died in child-bed, in juſtification of their

hypogaſtrii regionem, ad miraculum uſque, ampliari; non quidem ab aquoſæ ſubſtantiæ profuſione, ſed ſua ſponte, ut fructus maturi excludendis ſuis ſeminibus ſolent hiſcere.

Harv. Exercitat, lviii.

In partu difficili et laborioſo oſſa iſchii aliquantulum a ſe invicem dehiſcunt. *Ruyſch. Adv. Dec.* 2.

* Les uns et les autres diſent, qui ces os que ſe ſeparent ainſi a l'heure de l'accouchement, y ont ete diſpoſez peu a peu auparavant, par des humiditez glaireuſes qui ſ'ecoulent des environs de la matrice, leſquelles amolliſſent pour lors le cartilage qui les joint firmement, en d'autres temps. Mais ces deux opinions ſont auſſi eloignees de la verité que de la raiſon.

Mauriceau, tom. 1, *livr.* 2, *cap.* 1.

ſeveral

ſeveral opinions. But, notwithſtanding all which has been ſaid upon the ſubject, I know not that we are authoriſed by the experience of the preſent time to ſay, that a ſeparation, or a diſpoſition to ſeparate, prevail univerſally at the latter part of pregnancy, or at the time of labour; yet that theſe effects are often, if not generally, produced, may be gathered from the pain and weakneſs at the parts where the bones of the *pelvis* are joined to each other, before and after delivery. In ſome caſes pregnant women are alſo ſenſible of a motion at the junction of the bones, eſpecially at the *ſymphyſis* of the *oſſa pubis*, and the noiſe which accompanies it may be ſometimes heard by an attentive by-ſtander.

A ſtrong preſumptive argument in favour of the ſeparation of the bones has been drawn from quadrupeds. In theſe the ligaments which paſs from the obtuſe proceſſes of the *iſchia* to the *ſacrum*, on which the firmneſs of the junction of the bones very much depends; and which at all other times reſiſt any impreſſion attempted to be made upon them, are for ſeveral days previous to parturition gradually deprived of their ſtrength, and the animal walks in ſuch a manner as would incline

cline us to believe could only be produced by a ſeparation of the bones of the *pelvis*. Now it is not reaſonable to conclude, that a circumſtance which generally takes place in one claſs of viviparous animals ſhould never occur in another, eſpecially in a matter in which there is no eſſential difference.

We may, however, leave the queſtion to be completely ſettled by future obſervations. To inſiſt that either of the changes occur in every caſe, or that they never occur, ſeems an attempt to ſupport opinions repugnant to daily experience. For no perſon, who has been converſant in the diſſection of women who have died in childbed, can have wanted opportunities of ſeeing every intermediate ſtate of theſe parts; from a ſeparation in which the ſurfaces of the bones were looſened, and at a conſiderable diſtance from each other, to that in which there was not the leaſt diſpoſition to ſeparate.

It then appears that the degrees of ſeparation at the junctions of the bones of the *pelvis* to each other may be very different; and that, when it takes place beyond a certain degree, it is to be conſidered as morbid. Several caſes of this kind, which have occurred in my own

practice, and many for which I have been conſulted, have laid me under the neceſſity of conſidering this ſubject with the moſt ſerious attention, and I preſume that it may be produced by two cauſes; firſt, a ſpontaneous diſpoſition of the connecting parts; ſecondly, the violence with which the head of the child may be protruded through the *pelvis*. Of a ſeparation from each of theſe cauſes it will not be improper to give an example to prove the fact, and to ſhew its conſequences *.

CASE I.

A YOUNG lady of a healthy conſtitution and lively diſpoſition, who was married in the twenty-firſt year of her age, was, in the beginning of 1774, delivered of her third child, which was unuſually large, after a very ſevere

* In the 484th number of the Philoſophical Tranſactions there is an account of the ſeparation of the *ſymphyſis pubis*, to the diſtance of four inches, occaſioned by the ſudden ſtarting of the horſe when a gentleman was riding.

and

and tedious labour. For ſeveral days before her delivery ſhe was rendered unable to walk without aſſiſtance, by pain and weakneſs in her loins. Her recovery was favourable and uninterrupted, except that for ſeveral ſucceeding weeks ſhe was incapable of ſtanding upright or putting one foot before the other; the attempt to do either being attended with pain, and a ſenſe of looſeneſs or jarring, both at the parts where the *oſſa innominata* are joined to the *ſacrum* and at the *ſymphyſis* of *the oſſa pubis*. By the uſe of ſuch medicines and means as contributed to ſtrengthen her conſtitution ſhe ſoon became able to walk, and, in a few months, was perfectly well.

Having before ſeen a caſe of the ſame kind, I ſuſpected that theſe complaints were occaſioned by the weakneſs of the connexion of the bones of the *pelvis*; and, imputing this weakneſs to too frequent parturition, ſhe was adviſed to ſuckle her child a longer time; and accordingly continued a nurſe fifteen months.

After weaning her child ſhe ſoon conceived again; and, when the time of her confinement drew near, the complaints which ſhe had in her former pregnancy were increaſed

to ſuch a degree that ſhe could neither walk nor ſtand; and, for three weeks before her delivery, there was reaſon to ſuſpect that the bones of the *pelvis* were ſeparating.

July 7, 1777, ſhe was delivered of her fourth child. At the time of her labour ſhe had frequent faintings, great marks of diſturbance and irritability, and was wholly unable to move her inferior extremities.

A few days after her delivery ſhe had a fever, which terminated in an abſceſs in one of her breaſts. By this, which was very painful and diſtreſſing, ſhe was confined to her bed for near ſeven weeks. At the end of nine weeks ſhe could walk with crutches, when ſhe was ſent into the country, from which ſhe received much benefit; as ſhe believed ſhe likewiſe did by drinking half a pint of a ſtrong infuſion of malt twice every day. In about five months ſhe was able to walk without aſſiſtance, though ſhe was ſometimes ſenſible of the motion of the bones, which ſeem never to have been perfectly united.

About Chriſtmas ſhe was again pregnant; and in July, 1778, being indiſpoſed to move, as ſhe imagined by the ſudden and uncommon heat of the weather, the pain and weakneſs

in

in her back returned, and ſhe could not walk any more without aſſiſtance to the time of her labour, which came on October 11th. On the 13th ſhe was delivered of a very fine child. Her labour, which was unuſually ſevere and alarming, was made infinitely more fatiguing by her inability to move, all power of ſupporting herſelf being wholly loſt, and every neceſſary change of poſition being made by her aſſiſtants.

On the fourth day after her delivery ſhe was ſeized with a fever, which was ſoon removed, but her ſituation remained really deplorable. The pain at the junction of the bones continued; ſhe had no command of her inferior extremities; and when ſhe was moved, the pain, which ſhe deſcribed as the cramp, became excruciating, as if ſhe was tearing aſunder. Her ſtomach was at all times much diſturbed; but, when ſhe had the pain in an increaſed degree, a vomiting, or oppreſſive nauſea, or hiccough was brought on. The pain alſo produced ſtrange ſympathies in various parts, as a very teaſing cough, a conſtant ſneezing, a ſenſe of weight in her eyelids, which ſhe could not keep open, though ſhe was not ſleepy; noiſe in the bowels, and

many other nervous affections. When, therefore, the pain was violent ſhe had recourſe to opiates, which ſhe took diſcretionally, and the pain being quieted the ſympathies ſoon ceaſed.

At the requeſt of my patient I explained upon a ſkeleton the opinion entertained of her complaints; and, when I pointed out the manner in which the parts were ſuppoſed to be affected, ſhe was fully perſuaded of the truth of the opinion.

In this ſituation ſhe had remained for ſeveral months, when it was thought expedient that ſhe ſhould be raiſed from her bed, and make an effort to ſtand or walk, leſt her complaints ſhould be rendered worſe by the habit of reſting ſo long in an inactive ſtate. Every poſition was tried, and every contrivance made, which had a chance of being uſeful; but the power of ſupporting herſelf was totally gone; the motion of the bones was plainly perceived; and the conſequences of every trial were ſo painful and uncomfortable that it was not judged proper to repeat them, but to wait till, by time, the connexion of the bones was more confirmed.

About ſix months after her delivery ſhe men-

menſtruated, which ſhe continued to do at irregular periods; yet, though much benefit was expected from this circumſtance, no alteration was produced by it with reſpect to her complaints.

In the year 1779 ſhe was removed, upon a couch in a boat, to *Margate*, for the benefit of the air and bathing in the ſea, from which ſhe was always ſenſible of receiving advantage. There ſhe continued to reſide; and when eight years were elapſed from the time of her delivery ſhe became able to walk without crutches; and, though now perfectly recovered, her amendment was extremely gradual *.

CASE II.

MANY years ago I attended a young woman of a healthy but delicate conſtitution, who was in labour of her firſt child. The *os uteri* was fully dilated, the membranes broken, and the waters diſcharged, before I arrived at her houſe.

* I have lately been informed of two other caſes of the ſame kind, in one of which, the proceſs by which the lameneſs was at length cured, required eight years for its completion.

She was immediately put to bed, and the pains being very ſtrong, the head of the child was ſoon preſſed upon the *perinæum*, the laceration of which I endeavoured to prevent by ſupporting it in the uſual manner; but the head of the child was forced through the external parts in oppoſition to the reſiſtance which I was able to make.

At the inſtant when the head of the child was expelled I perceived ſomething to jar under my hand, and was even ſenſible of a noiſe, which led me to ſuſpect that the *perinæum* was lacerated by the ſudden expulſion of the head.

After a ſhort time the *placenta*, being ſeparated and protruded into the *vagina*, was extracted without hurry or violence. The uneaſineſs of which ſhe then complained, being ſuppoſed to be what are called *after-pains*, did not make me ſolicitous, but a few drops of *tinctura opii* were given to appeaſe it.

On the following days ſhe complained of more than uſual pain in the lower part of the *abdomen*, which ſhe did not accurately deſcribe; but as there was no ſymptom of fever, and the milk was duly ſecreted, no particular inquiry

quiry was made, and I preſumed that ſhe would ſoon be well.

On the fourth day after her delivery ſhe was taken out of bed, but could not ſtand or ſit in her chair on account of the pain and weakneſs in the part of which ſhe originally complained, and which I found to be immediately upon the *ſymphyſis* of the *oſſa pubis*.

For near three weeks ſhe remained in the ſame ſtate, perfectly well in her health, and eaſy in her bed, unleſs when ſhe attempted to turn on either ſide; but when ſhe was removed from her bed ſhe could neither ſtand or make any effort to walk without aſſiſtance, though ſhe could ſit for a few minutes, reſting her elbows upon the arms of the chair.

The continuance of a complaint ſo very uncommon rendered it neceſſary to have a conſultation, and a gentleman of great experience and ability was called in. After a very careful examination we found the internal parts in the natural ſituation and free from diſeaſe; the *perinæum* was not lacerated, nor was there the leaſt appearance of injury about the external parts. But it was judged by the ſeat of the pain, by her inability to ſtand or walk, except in particular attitudes and po-

ſitions,

ſitions, that the *ſymphyſis* of the *oſſa pubis* had given way, and was wholly ſeparated; and there was ſcarce a doubt but that the ſeparation had taken place when the bulk of the head of the child was paſſing between the ſpinous proceſſes of the *iſchia*, when I was ſenſible of the jarring noiſe.

The opinion of the ſeparation was chiefly founded on the particular attitudes and poſitions in which the patient ſought relief, it therefore ſeems neceſſary to deſcribe them more fully, as they were very remarkable.

When ſhe endeavoured to ſtand upright, which ſhe could do better on one foot than both, and better with her feet cloſe than at a diſtance, together with the pain at the *ſymphyſis*, ſhe had a ſenſe of extreme weakneſs, accompanied with a faintneſs. When ſhe firſt ſat down in her chair, reſting her elbows upon the arms of the chair, the complaints became tolerable. When ſhe had remained a little time in this poſition they were again importunate, and ſhe ſupported herſelf with her hands upon her knees, and preſently bent forwards, ſo as to lean her elbows upon her knees; this poſition becoming irkſome, ſhe was obliged to return to her bed, where ſhe was imme-

immediately eaſy. When ſhe firſt attempted to walk ſhe was compelled to bend forwards in ſuch a manner as to reſt her hands upon her knees, making a ſtraight line from her ſhoulders to her feet.

The explanation of her caſe, and the comfort ſhe received from the aſſurance that was given of her recovery, encouraged her to bear her confinement and the preſent inconveniencies ſhe ſuffered with compoſure; yet the knowledge we had acquired, preſuming our opinion to be true, was uſeful, rather by teaching us how to avoid miſchief, than by enabling us to render any actual ſervice.

At the end of fourteen weeks, whilſt ſhe was in a coach, into which ſhe had often been lifted for the benefit of air and exerciſe, ſhe had a diſcharge which ſhe ſuppoſed to be menſtruous; and, though it had ceaſed before her return, ſhe was ſenſible of immediate relief. From that time ſhe mended daily, and in ſix weeks was able to walk, her complaints having gradually left her.

She had afterwards three children, with all which I attended her. Her labours were eaſy; and neither before nor after her delivery had ſhe

ſhe any tendency to the complaints I have been deſcribing.

The diſcharge which preceded her recovery was thought to be menſtruous; but as it had ceaſed before her return, and gave relief to a part not directly affected by menſtruation, it is more reaſonable to conclude that it was from the *ſymphyſis*; and of whatever kind it was, that it had acted as an extraneous body, preventing the re-union of the bones.

Inſtances have occurred, though they are rare, of women who, after labours, have ſuffered much pain in the region of the *ſacrum*, and have loſt all power of moving their inferior extremities; and the inability has been imputed to ſome paralytic affection. They are ſaid to be bedridden, which deſcribes the effect, though it does not explain the cauſe, of their diſeaſe. As theſe patients have, after a confinement of ſeveral months, or even years, been generally reſtored to the uſe of their limbs, it is not unreaſonable to think that their infirmity was occaſioned by a ſeparation of the bones, which, at different periods after the accident, according to the degree of ſeparation,

ration, had recovered their former connexion and ſtrength.

SECTION IV.

An inquiry into the manner in which the bones of the *pelvis* may re-unite when they have been ſeparated ſeems neceſſary, as the treatment to be enjoined, and the proſpect of ſucceſs, will be regulated by the idea we entertain of the ſtate of the parts when ſeparated.

When the connexion of the bones of the *pelvis* has either been impaired or deſtroyed, it is probable that a confirmation or re-union takes place by a reſtoration of the original mode; by a *callus*, as in the caſe of a fractured bone; or by *anchyloſis*.

It is alſo poſſible for them to remain in a ſeparated ſtate; and that an articulation ſhould be formed by the ends of each bone, at the *ſymphyſis* of the *oſſa pubis*, and at the junction of the *oſſa innominata* with the *ſacrum*; of which,

which, by favour of Mr. CLINE, I have ſeen an inſtance in the dead body, and have had reaſon to ſuſpect the ſame accident in the living.

In all the lower degrees of imperfection in the union of theſe parts, it is reaſonable to conclude that the former mode is reſtored ſoon after delivery; for the complaints which women make of pain and weakneſs in theſe parts are almoſt always relieved before their month of confinement is concluded. But, ſhould they continue a longer time, it appears that the greateſt benefit will be derived from reſt and an horizontal poſition, which will leſſen the preſent inconveniencies, and favour that action of the parts, by which their infirmity muſt be repaired.

But, if the complaint is in an increaſed degree, and the health of the patient likewiſe affected, a longer time will be required for the recovery of the part; which may be forwarded by ſuch means as invigorate the conſtitution, ſuch applications as quicken the action of the parts, or by mechanical ſupport.

Should the injury be too great to allow of the reſtoration of the original mode of union, of which we are to judge by the conſequent impo-

impotence to move, a much longer time will be required for the formation of a callus, if that is ever done, but as a previous ſtep to an *anchyloſis*; which has been obſerved by anatomiſts to take place at the junction of the *oſſa innominata* with the *ſacrum*, not unfrequently, but never or very ſeldom at the *ſymphyſis* of the *oſſa pubis*. Under ſuch circumſtances, unleſs by an amendment of the general health, little good is to be expected from medicine, the proceſs which the parts muſt undergo being an operation of the conſtitution, which it will not be in our power to control. In the firſt caſe related, a variety of applications were tried, from the moſt emollient to thoſe which are active and ſtimulating; but from cold bathing only did ſhe receive any real advantage. The patient was alſo very much aſſiſted by the uſe of a ſwath, or broad belt, made of ſoft leather, quilted, and buckled with ſuch firmneſs over the lower part of the body as to leſſen, if not prevent, the motion of the bones, and this was reſtrained in its ſituation by a bandage paſſed between the legs, from the hind to the fore part of the belt.

In that unfortunate ſituation, in which a joint is formed between the ſeparated ſurfaces

of the bones, all hopes of recovery of the patient to her former abilities may be given up; and what remains to be done for her relief will be by the uſe of a belt, or a ſimilar contrivance, to ſubſtitute as much artificial firmneſs as we can, for the natural which is loſt. In the caſe in which I ſuſpected this event to have happened, the life of the patient was truly miſerable; but I preſume that ſuch very rarely occur, having been lately informed of another perſon, who, after a confinement of more than eight years to her bed, in conſequence of the ſeparation of the bones at the time of labour, was reſtored to the full and perfect uſe of her inferior extremities.

SECTION V.

THERE is a wonderful variety in the poſition of the *pelvis* in the different claſſes of animals, as it relates to that of the body in general; and their powers and properties very much depend upon this circumſtance. But, with

with a view to this ſubject, they may be divided into three kinds; the ſtrong, the ſwift, and the mixed.

In thoſe animals which poſſeſs the greateſt ſhare of ſtrength the poſition of the *pelvis* is nearly perpendicular, and the two apertures of the cavity horizontal.

In thoſe which are diſtinguiſhed by their ſpeed or agility, the poſition of the *pelvis* is horizontal, and the two apertures nearly perpendicular.

In mixed animals, or thoſe in which ſtrength and ſpeed are united, the poſition of the *pelvis* is neither horizontal nor perpendicular, but inclined; ſo as to partake, by different degrees of inclination, of a certain ſhare of the advantages of either poſition.

In the human ſpecies, when the poſition of the body is erect, the *pelvis*, which, bearing the weight of the whole body, is ſtronger in proportion to their ſize than in any quadruped, is ſo placed that a line paſſing from the third of the lumbar *vertebræ* will fall nearly upon the ſuperior edge of the *ſymphyſis* of the *oſſa pubis*; the cavity of the *pelvis* being projected ſo far backwards, that the *oſſa pubis* become the part on which the enlarged *uterus* chiefly reſts

in the advanced ſtate of pregnancy *. If then we recollect the ſmallneſs of the *oſſa pubis*, the manner in which they are connected, and advert at the ſame time to the increaſing effect, which may be produced by the internal preſſure of the weight ſupported by them, we ſhall not be ſurpriſed at the frequency of the complaints of pain and weakneſs at the *ſymphyſis*; eſpecially when the child is large, or the patient under the neceſſity of ſtanding for a long time. And ſhould there be any degree of weakneſs, relaxation, or diſunion, at the parts where the *oſſa innominata* are joined to the *ſacrum*, ſimilar effects will be produced; and one of theſe parts can ſcarcely be affected without an equivalent alteration in the other.

The conſequences of the ſeparation of the bones of the *pelvis*, or of their diſpoſition to ſeparate, will be more clearly comprehended if we conſider the *pelvis* as an arch ſupporting the weight of the ſuperincumbent body. In this view the *ſacrum* may be called the key-ſtone; the *oſſa innominata*, as far as the *ace-*

* This part has been conſidered as the centre of gravity in the human body; but *Deſaguliers* thought that it was in the middle ſpace between the *ſacrum* and *pubis*.

tabula,

fabula, the pendentives; and the inferior extremities the piers of the arch.

If a greater weight be laid upon an arch than it is able to ſuſtain, one of theſe conſequences will follow; the key-ſtone will fly; the pendentives will give way, or the piers will yield to the preſſure.

To prevent the two firſt accidents, it is uſual to lay heavy bodies upon the different parts of the arch, the weight of which muſt bear a relative proportion to each other, or the contrary effect will be produced; for, if too great weight be laid upon the key-ſtone, the pendentives will fail; and, if there be too much preſſure upon the ſides, the key-ſtone will be forced.

When the greateſt poſſible ſtrength is required in an arch, it it uſual to make what is called a counter-arch, which is a continuation of the arch till it becomes circular, or of any intended form. This contrivance changes the direction of the weight, before ſupported at the chord; and part of it will be conducted to the centre of the counter-arch, and borne in what is called the ſine of the arch.

If the reſemblance of the *pelvis* to an arch

can be allowed, we may conſider all the fore or lower part of it, between the *acetabula*, as a counter-arch, which will explain to us the reaſon of ſo much ſtreſs being made upon the *ſymphyſis* of the *oſſa pubis*, when there is any increaſe of the ſuperincumbent weight; or when that part is in a weakened or ſeparated ſtate, as in the ſecond caſe before deſcribed.

When that patient laid in an horizontal poſition ſhe was perfectly eaſy, there being then no weight upon the *pelvis*.

When ſhe was erect, the weight borne by the *ſymphyſis* being greater than it could ſupport, ſhe could walk before ſhe could ſtand; or, if ſhe ſtood, ſhe was obliged to move her feet alternately as if ſhe was walking; or ſhe could ſtand upon one leg better than upon both. By theſe various movements ſhe took the ſuperincumbent weight from the weakened *ſymphyſis*, and conducted it by one leg, in a ſtraight line, to the ground.

The fatigue of walking, or of the alternate motion of the feet, being more than ſhe was able to bear, ſhe was obliged to ſit. When ſhe firſt ſat in her chair ſhe was upright, reſting her elbows upon the arms of the chair; by which means part of her weight was con-

conducted to the chair, not descending to the *pelvis*. But there being then more weight upon the *symphysis* than it was able to bear for any long time, and her arms being weary, by putting her hands upon her knees, she took off more of the superincumbent weight, conducting it by her arms immediately to her knees. When she rested her elbows upon her knees the same effect was produced in an increased degree; but, this position becoming painful and tiresome, she had no other resource, and was obliged to return to her bed.

It cannot escape observation, that this patient instinctively discovered the advantages of the particular attitudes into which she put herself, and by which she obtained ease, as exactly as if she had understood her complaint, and the manner in which I have endeavoured to explain it.

In the weariness which follows common exercise, when we often change our position, apparently without design, the manner in which ease is procured to any particular part may be readily understood by a more extensive application of the same kind of reasoning.

SECTION VI.

The violence which the connecting parts or the bones undergo, when the head of the child is protruded through the *pelvis* with extreme difficulty, ſometimes occaſions an affection of that part of more importance than a ſeparation; becauſe, together with the inconveniencies ariſing from the ſeparation, the life of the patient is endangered by it. This is the formation of matter on the looſened ſurfaces of the bones, preceded by great pain, and other ſymptoms of inflammation; though, in the beginning of the complaint, it is difficult to aſcertain whether the connecting parts of the bones, or ſome contiguous part, be the ſeat of the diſeaſe.

When ſuppuration has taken place in conſequence of the injury ſuſtained at the junction of the *oſſa innominata* with the *ſacrum*, the abſceſs has in ſome caſes been formed near the part affected, and been cured by common treatment. But in others, when matter has been

been formed and confined at the *ſymphyſis* of the *oſſa pubis*, the ſymptoms of an hectic fever have been produced, and the cauſe has been diſcovered after the death of the patient. In others the matter has burſt through the capſular ligament of the *ſymphyſis* at the inferior edge, or perhaps made its way into the bladder; and in others it has inſinuated under the *perioſteum*, continuing its courſe along the *pubis* till it arrived at the *acetabulum*. The miſchief being thus extended, all the ſymptoms were aggravated; and, the matter making its way towards the ſurface, a large abſceſs has been formed on the inner or fore part of the thigh, or near the hip, and the patients, being exhauſted by the fever and profuſe diſcharge, have at length yielded to their fate. On the examination of the bodies after death, the track of the matter has been followed from the aperture of the abſceſs to the *ſymphyſis*, the cartilages of which were found to be eroded, the bones carious, and the adjacent parts very much injured or deſtroyed.

It may, perhaps, be poſſible to diſcover, by ſome particular ſymptom, when there is in this part a diſpoſition to ſuppurate; or it may

be diſcovered when ſuppuration has taken place. In all caſes of unuſual pain, attended with equivocal ſymptoms, it will therefore be neceſſary to examine theſe parts with great care and attention. For, when there is a diſpoſition to ſuppurate, by proper means it might be removed; and when matter is formed, if there be a tumefaction at the *ſymphyſis*, more eſpecially if a fluctuation could be perceived, we might deliberate upon the propriety of making an inciſion to evacuate the matter; and by ſuch proceeding further bad conſequences might be prevented *.

SECTION VII.

THE form of the ſuperior aperture of the *pelvis* has been deſcribed by ſome as triangular, and by others as oval, with the wideſt part from one ſide to the other. But the inferior aperture, independent of the ligaments and ſoft parts, cannot be ſaid to reſemble any

* See *Medical Obſervations and Inquiries*. Vol. II.

known

known or general form, on account of its irregularity, though the wideſt part is from the inferior edge of the *ſymphyſis* to the point of the *os coccygis*, allowing for the regreſſive motion of that bone.

The dimenſions of the ſuperior aperture of the *pelvis*, from the upper part of the *ſacrum* to the upper edge of the *ſymphyſis*, are generally ſtated to be rather more than four inches; and between the two ſides they ſomewhat exceed five *.

Of the dimenſions of the inferior aperture it is difficult to form a judgment; but if the ligaments are preſerved it may be ſaid that the proportions are reverſed, the narroweſt part being on each ſide. But in the form and dimenſions of the *pelvis*, in different women, there is an endleſs variety, not depending upon any alteration which may be produced by diſeaſe.

The depth of the *pelvis*, from the upper part of the *ſacrum* to the point of the *os coccygis*, is about five inches; but this will be increaſed when the latter bone is preſſed back-

* Quæ menſuræ, pollice ferè integro, ſimiles menſuras capitis fœtus ſuperant. *Haller. Phyſiolog.* lib. xxviii.

wards,

wards. From the margin of the *pelvis* to the inferior part of the obtuſe proceſſes of the *iſchia* the depth is about three inches, and at the *ſymphyſis* about one and a half. It appears that the depth of the *pelvis*, at the poſterior part, is rather more than three times the depth at the anterior; and that there is a gradual change between the two extremes, if we admit the ligaments to make a part of the outline of the inferior aperture. The knowledge of theſe circumſtances will enable us to judge, in the living ſubject, how far the head of the child has proceeded through the *pelvis*, and prevent any deception to which we might be liable, if we were to form our opinion by the readineſs with which we can feel the head at the anterior part.

The cavity of the *pelvis* is of an irregular, cylindrical form; but, towards the inferior aperture, there is ſome degree of convergence, made by the points of the ſpinous proceſſes of the *iſchia* and the termination of the *os coccygis*. This convergence is of great importance in regulating the paſſage of the head of the child, as it deſcends towards the inferior aperture; and, being perfected by the ſoft parts, it gives to the *vertex*, or preſenting part of the head, the

the diſpoſition to emerge under the arch of the *pubis*.

On the concavity or hollow of the *ſacrum* the eaſe or difficulty with which the head of the child paſſeth through the *pelvis* will very much depend; and a ſimilar curvature is continued by means of the iſchiadic *ſinus*, and by the diſpoſition of the ſacroſciatic ligaments to the obtuſe proceſſes of the *iſchia*, where the ſides of the *pelvis* are perpendicular. The upper edge of the *oſſa pubis* has a ſlight reflection outwards, which prevents any obſtruction to the entrance of the head of the child into the *pelvis*; and at the lower edge there is ſome degree of divergence, by which the departure of the head out of the *pelvis* is very much facilitated.

SECTION VIII.

BEFORE we proceed to the examination of the manner in which the head of the child paſſeth through the *pelvis* at the time of birth,

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it is neceſſary to examine its dimenſions and ſtructure.

The largeſt part of the head of a child, not altered by compreſſion, is from the hind to the forehead. The diameter from one ear to another is leſs by nearly the ſame proportion, as the ſpace between the *ſacrum* is leſs than that between the ſides of the *pelvis*, at the ſuperior aperture.

The head of a child, which appears to be larger according to the ſize of the body than that of other animals, is at the time of birth incompletely oſſified at every part where the bones of which the *cranium* is compoſed afterwards unite; but chiefly at the greater fontanelle, or the centre of that part where the parietal and frontal bones meet in the adult. By this incomplete oſſification, and by the preſſure to which the head of the child is ſometimes ſubject in its paſſage through the *pelvis*, the form of the head may be very much altered, and the dimenſions leſſened; for the edges of the bones will not only accede to each other, but will lap over in a very extraordinary manner, without any detriment to the child. The degree of oſſification varies in different ſubjects; but the head of a new-

born

born infant is univerſally found to be incompletely oſſified, and the advantage reſulting from it is not only perceived in thoſe difficulties which may be occaſioned by the natural large ſize of the head of the child, but in thoſe alſo which are produced by all the leſs conſiderable degrees of deformity of the *pelvis*. It is evident beyond all doubt, if this proviſion had not been made, that many children muſt have been deſtroyed at the time of birth, or their parents muſt have died undelivered.

Daily experience very obviouſly and ſufficiently proves that there is a relative proportion between the head of the child and the *pelvis* of the mother; and, from the excellent order obſerved in all the operations of Nature, it would be reaſonable to conclude that the largeſt part of the head is conformable to the wideſt part of the *pelvis*. By the examination of a great number of women, who have died in various ſtages of the act of parturition, it has appeared, contrary to the general doctrine of the ancient and of many modern writers, when the poſition of the head was perfectly natural, that the ears were placed towards the *ſacrum* and *pubis*, or a little obliquely; and that the *vertex*, or that part where

where the hair diverges, is exactly or nearly oppoſed to the centre of the ſuperior aperture of the *pelvis* *. In the courſe of the deſcent of the head, there being ſome difference in the form of the *pelvis* at each particular part of the cavity, the poſition of the head is accommodated to each part, not by accident but compulſion, in conſequence of that convergence at the lower part of the *pelvis* before mentioned. With reſpect to the *pelvis*, the lower the head of the child has deſcended, the more diagonal is the poſition of the ears; but they are not placed exactly towards the ſides of the *pelvis*, even when a portion of the head has emerged under the arch of the *pubis*. But this deſcription of the changing poſition of the head of the child in its paſſage through the *pelvis* is founded on the preſumption that it preſents naturally, and is guided by the form of the internal ſurface. If the head ſhould preſent differently, there will be correſponding, but not the ſame, changes; or, if it ſhould be very ſmall, it will not be in-

* This obſervation was firſt made by Sir FIELDING OULDE about the year 1737.
See his Treatiſe on Midwifery.

fluenced

fluenced by the *pelvis*, but may pafs in any direction.

It does not appear that any ill confequences would follow an erroneous opinion of the manner in which the head of the child is protruded through the cavity of the *pelvis* in a natural labour; for, no affiftance being wanted, no principle was required for the regulation of our conduct. But, in all cafes in which there was a neceffity of giving affiftance, and where a change of what was deemed the wrong pofition of the head was improperly compriſed as a very material part of that affiftance, as in the ufe of the *forceps*, great mifchief muft often have been unavoidably done both to the parent and child.

SECTION IX.

From the examination of the form and dimenfions of the cavity of the *pelvis*, and of the head of a child, attempts have been made to explain all the circumftances of a labour upon

upon mechanical principles, and to eſtabliſh the practice of midwifery upon the foundation of thoſe principles.

It may be ſuppoſed, for a moment, that the paſſage of the head of a child, through the cavity of the *pelvis*, ſhould be conſidered ſimply as a body paſſing through a ſpace; and we may try whether it is poſſible to apply mechanical principles with advantage for the explanation.

The firſt circumſtance to be conſidered in the attempt is, to aſcertain with preciſion the capacity of the ſpace. It is true that we have had many menſurations of the *pelvis* in all its parts, and that we have acquired a competent knowledge of the general dimenſions; but we know, at the ſame time, that there is in the *pelvis* of every individual woman ſome variety, and that the exact knowledge of theſe varieties cannot be gained in any living ſubject.

It is equally neceſſary that we ſhould have an accurate knowledge of the ſize of the body intended to be paſſed through this ſpace. But, though we have a good general idea of the figure and bulk of the heads of children at the time of birth, we are not ignorant that thoſe of

of any two children were never found to be exactly alike, and that the peculiar difference cannot be diſcovered before a child is born.

The head of a child is of a limited ſize before it enters the cavity of the *pelvis*; but, by compreſſion in its paſſage, this is altered in a manner and to a degree of which it is impoſſible to form any previous judgment.

In the conſideration of a body paſſing through a ſpace, there is alſo a neceſſity of knowing whether it be intended to paſs by its own gravity or force, or whether it is paſſive, and is to be propelled by any adventitious power. If by the latter, as is the caſe of a child at the time of birth, the knowledge of the degree of that power is neceſſary to enable us to form an eſtimate of the poſſibility or likelihood of its ſucceſs; but of the degree of this power we can form a very uncertain conjecture in any particular caſe.

If then we have no preciſe ideas of the dimenſions of the ſpace, nor of the magnitude of the body, nor of the alterations in ſize or form which the body may undergo, nor of the power excited to propel the body, it does not appear poſſible to explain, upon mechanical principles, the progreſs of a labour.

So much is however to be granted to the introduction of mechanical principles into the practice of midwifery, that they afford the greateſt advantage in all thoſe caſes of extreme difficulty in which the aſſiſtance of art is ultimately required, becauſe ſuch aſſiſtance muſt be given upon thoſe principles; for, though they will not explain, they will illuſtrate the operations of the animal body; and, when applicable, are the ſureſt guides of human actions. But, on the whole, a fondneſs for, an imperfect knowledge, and ſome affectation of mechanical principles, ſeem to have been very detrimental; as to them, the frequent and unneceſſary uſe of inſtruments, and ſometimes their improper uſe, in the practice of midwifery may in a great meaſure be attributed.

SECTION X.

THE obſervations which were made on the form and dimenſions of the cavity of the *pelvis* relate to its natural ſtate; but theſe are alſo

alſo to be conſidered when the *pelvis* is diſtorted.

Of the diſtortion of the *pelvis* there are two general cauſes. The firſt is that diſeaſe incident to children in the very early part of their lives, known by the term *rachitis*, which, preventing the bones from acquiring their due ſtrength or ſufficient firmneſs to ſupport the weight of the ſuperincumbent body, they bend in different directions and degrees, according to their weakneſs and the weight impoſed upon them. The ſecond is a diſeaſe which may occur at any period of life, and from its effect is called *oſteoſarcoſis*, or *mollities oſſium**. It is far leſs frequent than the *rachitis*, but more dreadful in its conſequences; which no medicine hitherto tried has had ſufficient efficacy to prevent or to cure. In this diſeaſe the oſſific matter is not thought to be diſſolved or altered, but to be re-abſorbed from the bones into the conſtitution, and carried out of the body by the common emunctories; or depoſited upon ſome other part where it is uſeleſs or prejudicial. The bones thus loſing the principle of their ſtability become ſoft, according to the degree

* Malacoſteon. Oſſium mollities. Vogel. Dxxiij.

and continuance of the diſeaſe; are unable to ſuſtain the weight of the body, and change their natural forms, in proportion to their weakneſs; ſo that in ſome inſtances the moſt diſtorted and frightful appearance of the whole body hath been exhibited *.

The effect of either of theſe diſeaſes is not confined to the *pelvis*; yet it is ſcarcely poſſible that either of them ſhould exiſt for any length of time without producing their influence upon it.

The *pelvis* is more commonly diſtorted at the ſuperior aperture than at any other part. This is particularly occaſioned by the natural projection of the upper part of the *ſacrum*, and the loweſt of the lumbar *vertebræ*; though, in very bad caſes, a conſiderable deviation from their natural poſition is given to ſeveral of the *vertebræ*. Should a diſeaſe exiſt in the conſtitution which is capable of weakening the bones, it will not appear extraordinary that the *ſacrum* ſhould be diſtorted, if we recollect that its texture is originally ſpongy; that it ſupports, both in the erect and ſedentary poſition, a great part of the weight of the body;

* See Medical Obſervations and Inquiries, vol. V. caſe 23.

and

and that, by the manner of its junction with the laſt of the *vertebræ*, a conſiderable angle is made, which, if but little increaſed, will cauſe a very important change in the form and dimenſions of the ſuperior aperture of the *pelvis*. In ſome caſes an irregular convexity, and in others a concavity, are produced by the bending of the *oſſa pubis* in different ways and degrees; by which, together with the projection of the *ſacrum* and lumbar *vertebræ*, the dimenſions of the ſuperior aperture of the *pelvis*, which in the narroweſt part ſhould exceed four inches, are reduced to leſs than one, and altered in every poſſible direction.

The form and dimenſions of the cavity of the *pelvis* may be changed in any part of its ſpace; but the moſt frequent alterations proceed from the *ſacrum*, which, beſides the projection before mentioned, may become too ſtraight when the advantages which ſhould be derived from its concavity will be loſt. Or it may have too quick a curvature, by which the concavity will be rendered ſo ſmall as not to admit the head of the child; or an exoſtoſis may be formed on its internal ſurface, which will be the cauſe of inconveniencies equivalent

to thoſe occaſioned by the want of a proper degree of curvature.

The *os coccygis* may be preſſed inwards in ſuch a manner that the point of it may approach the centre of the cavity; or the motions between the different portions of the bone may be loſt; or an *anchyloſis* may be formed between that bone and the *ſacrum*; by all which changes, according to their degree, the head of the child may be impeded in its paſſage through the *pelvis*.

The *iſchia* may be diſtorted by the unnatural bent of the ſpinous proceſſes; and the effect of their preſſure may be obſerved, for ſome time after birth, on the temporal or parietal bones of the head of a child propelled between them with much difficulty. The dimenſions of the inferior aperture alſo may be leſſened by the tuberoſities of the *iſchia* bending inwards or forwards, by which the arch of the *pubis* will be leſſened, and rendered unfit to allow of the emergence of the head of the child, under the *ſymphyſis* of the *oſſa pubis*.

When the ſtability of the bones of the *pelvis* is impaired, it is not poſſible to enumerate every kind of diſtortion which they may ſuf-

fer;

fer; but it is principally in the degree that we are to ſeek for thoſe great, and ſometimes, though rarely, inſurmountable difficulties which occur in the practice of midwifery, and prove dangerous both to the parent and child.

In ſome caſes the diſtortion of one part of the *pelvis* produces an enlargement of the reſt. Thus when the ſuperior aperture is contracted, the inferior is expanded; and hence it is often obſerved in practice, when the head of the child hath paſſed the point of obſtruction with the moſt tedious difficulty, that a labour will be unexpectedly and ſpeedily completed.

When women have the appearance of being much deformed, it is reaſonable to think that the *pelvis* muſt be affected. But there have been many inſtances of extreme diſtortion of the ſpine, yet the *pelvis* has preſerved its proper form and dimenſions; and ſome women, who were in other reſpects ſtraight and well proportioned, have had a diſtorted *pelvis*.

If the inferior extremities are crooked, or if any part of the body was diſtorted at a very early period of life, and remained in that ſtate, it is ſaid that we may be aſſured the *pelvis*

partakes of the diſeaſe, and is involved in its conſequences. But, when the ſpine becomes diſtorted at a more advanced period, it is not to be eſteemed a preſumptive ſign of a diſtortion of the *pelvis*, being generally occaſioned by a local diſeaſe of the ſpine. Theſe obſervations are, I believe, commonly well founded; but, as there are many exceptions, we ſhould not be juſtified in giving an opinion of a caſe of this kind, unleſs we were permitted to make an examination *per vaginam*. Nor ſhould we be able, by this examination, to determine with preciſion the exiſtence of every ſmall diſtortion, but ſuch only as was conſiderable in its degree. If we ſhould not be able to feel any projection of the *ſacrum*, or *vertebræ*, we ſhould have a right to conclude that there was no conſiderable deformity of the *pelvis*; but, if we could feel the *ſacrum*, or *vertebræ*, we muſt judge by the readineſs with which they can be felt, of the degree of diſtortion; and of the impediments which may be thereby occaſioned. But, in a matter of ſo much concern, it behoveth us to be extremely circumſpect before we give an opinion, leſt, by our error, the peace of families and the comfort of individuals ſhould be deſtroyed.

CHAPTER

CHAPTER II.

SECTION I.

ON THE EXTERNAL PARTS OF GENERATION.

THE preceding account of the *pelvis* appearing sufficient to serve all the useful purposes of the practice of midwifery, we shall, in the next place, consider the parts of generation, which have been properly divided into external and internal.

The external parts are the *mons veneris*, the *labia*, the *perinæum*, the *clitoris*, and the *nymphæ*. To these may be added the *meatus urinarius*, or orifice of the *urethra*. The *hymen* may be esteemed the barrier between the external and internal parts.

That soft fatty prominence which is situated upon the *ossa pubis*, extending towards the groins and *abdomen*, is called *mons veneris*. Its use seems to be chiefly that of preventing inconvenience or injury in the act of coition. If

a line

a line be drawn acroſs the anterior angle of the *pudendum*, all that part above it, which is covered with hair, may be called *mons veneris*; below it the *labia* commence, which, being of a ſimilar, though looſer, texture, appear like continuations of the *mons veneris*, paſſing on each ſide of the *pudendum*, which they chiefly compoſe. Proceeding downwards and backwards the *labia* again unite, and the *perinæum* is formed.

All that ſpace between the poſterior angle of the *pudendum* and the *anus* is called the *perinæum*, the external covering of which is the ſkin, as the *vagina* is the internal; including between them cellular and adipoſe membrane, and the lower part of the *ſphincter ani*. The extent of the *perinæum* is generally about an inch and a half, though in ſome ſubjects it is not more than one, and in others exceeds two inches. The thin anterior edge is called the *frænum labiorum*.

Below the anterior angle of the *pudendum* the *clitoris* is placed, which riſes by two *crura*, or branches, from the upper part of the *rami* of the *iſchia*. The external part, or extremity, of the *clitoris* is called the *glans*, which has a prepuce or thin covering, to which the *nymphæ*

phæ are joined. The *clitoris* is ſuppoſed to be the principal ſeat of pleaſure, and to be capable of ſome degree of erection in the act of coition.

The *nymphæ* are two ſmall ſpongy bodies, or doublings of the ſkin, riſing from the extremities of the prepuce of the *clitoris*, and reſembling in their form the *labia*. They paſs on each ſide of the *pudendum*, within the *labia*, to about half its length, when they are gradually diminiſhed till they diſappear.

Immediately below the inferior edge of the *ſymphyſis* of the *oſſa pubis*, between the *nymphæ*, is the *meatus urinarius*, or termination of the *urethra*, which is about one inch and a half in length; and runs to the bladder in a ſtraight direction, along the internal ſurface of the *ſymphyſis*, to which, and to the *vagina*, it is connected by cellular membrane. On each ſide of the *meatus* are ſmall orifices, which diſcharge a mucus, for the purpoſe of preſerving the external parts from any injury, to which they might be liable from the acrimony of the urine.

There is a very great difference in the appearance of all theſe parts in different women, eſpecially in thoſe who have had many chil-

dren, and at various periods of life. In young women they are firm and vegete, but, in the old, theſe, together with the internal parts, become flaccid and withered *,

SECTION II.

THE external parts of generation are ſubject to many diſeaſes in common with the other parts of the body. They are alſo expoſed to ſome peculiar complaints, and to accidents at the time of parturition, of which we ought to be well informed, that we may, by our care, prevent them, or give ſuch relief as may be required when they are unavoidable.

The *labia* and *nymphæ*, as might be expected from their fatty and cellular texture, are liable to elongation, to excreſcences, and to the production of ſcirrhous tumours; which in

* Partes genitales, cum earum nullus eſt uſus, marceſcunt, detrahuntur, ac veluti obliterantur. *Harv.*

Ovaria in vetulis admodum exilia ut plurimum viſuntur. *Ruyſch, Obſ. Anat.* xlv.

ſome

ſome inſtances have grown to an enormous ſize, eſpecially in hot climates *.

It is not unuſual for one of the *labia* to be larger and more pendulous than the other; but the enlargement, or elongation, are not regarded as diſeaſes till ſome inconvenience is produced by them. The ſame obſervation may be made of excreſcences or ſcirrhous tumours, which are therefore generally found to have acquired a conſiderable ſize before they are divulged by the patient.

In all the ſubordinate degrees of theſe complaints, when there is reaſon to think that they ariſe from ſome conſtitutional cauſe, relief may be given by ſuch medicines or treatment, as will alter and amend the general health. Or if they are owing to any ſpecific cauſe, as the venereal diſeaſe, of which excreſcences in particular are a very frequent conſequence, preparations of quickſilver are to be uſed or given, till we are certain that the conſtitution is freed from the infection. Applications ſuitable to the ſtate they are in are at the ſame time neceſſary; and of theſe

* Nymphæ aliquando enormes ſunt; quare Coptæ et Mauri eas circumcidunt. *Haller; Phyſiolog.*

there

there will be occaſion to uſe a variety, from the moſt emollient and ſoothing, which may be proper when the parts are in a very irritable and inflamed ſtate, to thoſe which have different degrees of eſcharotic qualities; when we preſume there is a chance of removing the excreſcences by ſuch means. But when complaints of this kind have been of long continuance, or when the parts have increaſed to ſuch a ſize as to hinder the common offices of life, there is but little reaſon to hope for their removal by any application or medicines, and the diſeaſed part muſt be extirpated with the knife; which operation may be performed with ſafety, and the faireſt proſpect of ſucceſs. As the blood-veſſels are few, and naturally ſmall in proportion to the ſize of the parts, there is not much danger of an hemorrhage, though, in ſome caſes, this is ſaid to have been alarming and extremely difficult to manage *. But I have more than once ſeen the enlarged *nymphæ* and ſeveral excreſcences, of conſiderable ſize, removed by the knife at the ſame time, yet the ſurgeon has not been under the neceſſity of tying a ſingle blood-veſſel.

* See Mauriceau, Vol. 2. Obſ. clxxiv.

SECTION

SECTION III.

EDEMATOSE ſwellings of the external parts may occur, either in a general anaſarcous ſtate of the whole body, or when any cauſe produces a temporary preſſure upon thoſe veſſels which are intended to conduct the returning fluids from the inferior extremities; particularly the enlarged *uterus*, in the advanced ſtate of pregnancy. Whatever may be the cauſe of theſe ſwellings, if they ſhould increaſe ſo as to become troubleſome, the method of giving relief is obvious and eaſy, as it conſiſts only in making a few ſlight ſcarifications in different parts of the *labia*, by which the ſtagnating fluids will be diſcharged, and the *labia* reduced to their natural ſize. It is not unuſual for theſe ſwellings to return two or three times towards the concluſion of pregnancy; in which caſe, or even in the time of labour, the ſcarifications, if neceſſary, may be repeated. A flannel wrung out of ſome emollient fomentation, and applied to the parts when they have been ſcarified, will contribute to the eaſy and perfect diſcharge of the fluids.

SECTION IV.

THE coheſion of the *labia* to each other has been mentioned as a complaint occurring to adult women, eſpecially in hot climates, if inflammation, preventing the due ſecretion of the mucus, with which theſe parts are naturally clothed on their internal ſurface, ſhould take place; or if they ſhould be excoriated by any accidental cauſe, and neglected in that ſtate. The *labia* will alſo very frequently cohere in children, in ſuch a manner as to leave no veſtige of a paſſage into the *vagina*, except at the anterior part, for the diſcharge of the urine; and lead us, by the general appearance, to apprehend a defect in the organization of the parts. In ſuch caſes, we have been directed to ſeparate them with a knife; and how far ſuch an operation may be neceſſary in the adult, if the parts ſhould cohere either in conſequence of ſome new affection, or if a coheſion originating in infancy ſhould continue to adult age, muſt depend upon the judgment of the ſurgeon. But, in infants, ſuch an operation is neither requiſite or proper; becauſe

becauſe a ſeparation may always be made, by a firm and ſomewhat diſtracting preſſure upon each *labium* at the ſame time, which ſcarcely makes the child complain; though the ſmall veſſels which had inoſculated from one *labium* to the other, may be perceived to be dragged out during the continuance of the preſſure.

It is extraordinary that ſo little notice ſhould have been taken of a complaint which is very frequent in children; but it is probable that the conſtant and free uſe of their limbs, when they begin to walk, cauſes a ſeparation without any other aſſiſtance, otherwiſe the coheſion muſt frequently have occurred in adults, in whom the caſe is very rare. But on this expected probable ſeparation we ſhould be afraid to rely. When a ſeparation of the cohering *labia* has been made in the manner beforementioned, a folded piece of linen, moiſtened in a very weak ſolution of the *vitriolum album*, or ſome lightly aſtringent liquor, ſhould be applied every night when the child is put to reſt, to prevent the reunion, to which there is a great diſpoſition; and which will certainly take place if the *labia* are ſuffered to remain in contact immediately after the ſeparation.

SECTION V.

In conſequence of violent inflammation from accidental or other cauſes, the *labia* may become tumefied, and a large abſceſs has been ſometimes formed. This is attended with extreme pain, the deſire of relieving which has induced ſurgeons to open the abſceſs, and give vent to the matter as ſoon as it could be perceived to fluctuate. But though the pain may, for the preſent, be abated by the early diſcharge of the matter, the part continues indurated; is indiſpoſed to heal; and not unfrequently becomes fiſtulous. But, if the abſceſs is ſuffered to break of its own accord, the part has the kindeſt tendency to heal, and, with common care, the cure is ſoon perfected. Should the pain be extreme during the ſuppuration, which is often the caſe, beſides the uſe of fomentations and cataplaſms, recourſe muſt be had to opiates for its abatement.

SECTION VI.

THOUGH the *perinæum* is not often affected with any particular diſeaſe, it is ſubject to a laceration from the diſtention which it undergoes when the head of the child is paſſing through the external parts. This laceration, which is moſt likely to happen with firſt children, though with rude treatment, hurry, or neglect, either on the part of the patient or practitioner, it may occur with ſubſequent ones, eſpecially in thoſe women who have the *perinæum* naturally ſhort, differs in direction and extent, and may be, in every degree, from the *frænum*, or edge of the *perinæum*, to the the extremity of the *ſphincter ani*, or even higher up into the *rectum*.

That ſome degree of laceration ſhould ſometimes occur will not be ſurpriſing, if we conſider the great change and violence which all theſe parts ſuſtain at the time when the head of the child is paſſing through them; or when a laceration begins, that it ſhould extend through a part extremely thin, and ſuffering an equal degree of force. When the *perinæum*,

is indiſpoſed to diſtend; or if, when diſtended, it cannot permit the head of the child to paſs with facility, the anterior part of the *rectum* is dragged out, and gives to the *perinæum* a temporary elongation. The true *perinæum*, and the temporary, as it may be called, thus forming an equal, uninterrupted ſpace, if a laceration ſhould commence at any part, it might extend through the whole. Of the method by which the laceration may be prevented, and of the treatment which may be proper when it has occurred, we ſhall ſpeak in other places. At preſent we ſhall inquire into the cauſes of an accident, the prevention of which is the principal object of our attention in natural labours.

Though no means are uſed to prevent the laceration of the *perinæum* in quadrupeds at the time of parturition, it is remarkable that they are very rarely or never liable to it, except in thoſe caſes in which the neceſſity of their ſituation is ſuppoſed to require aſſiſtance; and this being given with ignorance and violence, may not improperly be eſteemed the cauſe of the accident. It is therefore reaſonable to preſume that the frequent occurrence of this laceration in the human ſpecies, allow-

ing

ing that it is in ſome caſes unavoidable, ought to be imputed to ſome accidental cauſe, or to error in conduct, rather than to any peculiarity in the conſtruction of the part, or in the circumſtances of their parturition. For, I believe, no obſervation is more generally true, than that of the exiſtence of a power in the ſtructure and conſtitution of animals, by which evils are prevented or remedied, and by which all the difficulties occurring at the time of their parturition are overcome; which power is commonly exerted with a degree of energy and effect proportionate to the difficulty.

The cauſes diſpoſing to, and capable of, producing a laceration of the *perinæum*, ſeem to be theſe:

Firſt, The increaſed tenderneſs and delicacy of the ſkin, occaſioned by peculiar habits or modes of living. That this and every other part of the body may, by alteration from its natural ſtate, become more ſuſceptible of pain, and leſs able to bear violence of any kind, is clearly proved by the different degrees of thoſe properties in parts of the body which are uſually clothed or uncovered.

Secondly, The poſition of women at the time of delivery. Women in this country, at the preſent time, are placed in bed upon their left ſide, with their knees drawn up towards the *abdomen*; which poſition, though convenient to the attendant, ſeems to occaſion a projection of the part of the child which preſents, in a line unfavourable to the *perinæum*. But, if they are placed upon their hands and knees, which is a poſition at that time perhaps the moſt natural, as it is often inſtinctively ſought for, and, in ſome countries, choſen in caſes of difficulty and diſtreſs; then the head or part preſenting would, by its gravitation, leſſen the preſſure upon the *perinæum*, and, of courſe, the hazard of its laceration.

Thirdly, The diſturbance of the order of a labour. Every change which is made in the parts at the time of labour is ſucceſſive, and every pain ſeems to produce two effects; it dilates one part, and gives to ſome other part a diſpoſition to be dilated. If therefore, by hurry, or imprudent management, the head of the child, in its paſſage through the *pelvis*, be brought into contact with parts which have not yet acquired their diſpoſition to dilate; or if, by artificial dilatation, we attempt to ſupply the

want

want of the natural, the parts will ſooner be lacerated than diſtended.

Fourthly, When animals bring forth their young, the effort to expel is inſtinctive, no part of the force being voluntary. Women, on the contrary, either from erroneous opinions, or from falſe inſtructions, exert a conſiderable degree of voluntary force with the hope and intention of finiſhing their labours ſpeedily. If we ſuppoſe that the *perinæum* is able to bear all the force inſtinctively exerted, without injury, but no greater; then the whole voluntary force will, in proportion to its degree, induce the danger of a laceration, unleſs its effect is counteracted by ſome adventitious help. On this principle it is uſual to ſupport the *perinæum*, not with the view of altering the direction of the head of the child, but of retarding its paſſage through the external parts. For the *perinæum* it not torn becauſe the head of the child is large, or paſſes in any particular direction, but becauſe it paſſes too ſpeedily, or preſſes too violently, upon the parts, before they have acquired their dilatability; it therefore rarely happens that the *perinæum* is lacerated in very ſlow or difficult labours.

SECTION VII.

THAT kind of laceration of the *perinæum*, which commences at the anterior edge, and runs obliquely or directly backwards, is alluded to in every diſſertation upon this ſubject. But there have been inſtances of another kind, which may be called a burſting or perforation of the *perinæum*, at that part which is connected with the circumference of the *anus*, when the anterior part is preſerved; and through ſuch perforations children have ſometimes been expelled. In a caſe which occurred in my own practice, I was ſenſible of the laceration before the expulſion of the head, which I guided through the natural paſſage, ſupplying the want of the *perinæum* with the palm of my hand. The external parts were, in this patient, extremely rigid and contracted; and, as I applied myſelf with great aſſiduity to preſerve them, I imputed the accident to this circumſtance, rather than to the neceſſity of the caſe. The patient did not make any unuſual complaint immediately after delivery; but, on the following day, there

was a violent inflammation of the parts, with a ſuppreſſion of urine, and the *lochia* were diſcharged through the ruptured part, but no *fæces* ever came by the *vagina*. By the uſe of fomentations and cataplaſms, of cooling laxative medicines, and occaſionally of opiates, the inflammation was ſoon abated. The ſuppuration being profuſe, the bark was given; and, at the end of ten weeks, the lacerated parts were healed. No particular examination was ever made during the cure, and none but ſuperficial dreſſings applied. When I attended this patient with her ſecond child, I obſerved a large round cicatrice at the rugous part of the *anus*, but ſhe ſcarcely ſuffered any inconvenience from it; and recovered as well as if no ſuch accident had formerly happened.

SECTION VIII.

THE *clitoris* is little concerned in the practice of midwifery, on account of its ſize and ſituation. But it is ſometimes elongated and enlarged in ſuch a manner as to equal the ſize of

of the *penis*, when it makes one of thoſe many peculiarities which is ſuppoſed to conſtitute an hermaphrodite *, or an animal partaking of the ſexual properties of the male and female; but if there are any examples of true hermaphrodites, the term is, in this caſe, improperly uſed †.

Should the *clitoris* increaſe to ſuch a ſize as to occaſion much inconvenience, it may be extirpated either with the knife or ligature; but if the cauſe of the enlargement, which is commonly aſſigned, be true, it is probable that no motive of delicacy or inconvenience will be a ſufficient inducement to ſuffer the pain of extirpation ‡.

* Hermaphroditi veri non dantur.—*Ruyſch. Theſ.* viii.

† *Clitoris* major in fœtu exiſtit.—*Ruyſch. Theſ.* vi. l. 1. *Cercoſis.* Clitoris prælonga. Vogel. ccccxxxv.

‡ Quæ extra venerem, in caſta femina parva fuerat, ſuo etiam modo arrigit et intumeſcit, ut prepoſteræ veneri ſervire poſſit, multoque uſu ejus turpitudinis, denique moles ejus augetur.—*Haller. Phyſiolog.*

SECTION IX.

THE bladder and *urethra* in women are naturally liable to fewer diſeaſes than the ſame parts in men, becauſe their connexion is far more ſimple, and their uſe is wholly confined to the reception and conveyance of the urine. Women have, nevertheleſs, a ſtone ſometimes formed in the bladder; and it has been thought an improvement in practice to evade the operation of lithotomy, by diſtending, with bougies gradually enlarged, the *urethra*, till it is of ſufficient dimenſions to allow a ſtone to paſs through it. It is proved by experience, that the *urethra* will diſtend, or may be artificially diſtended, ſufficiently to allow a ſtone of a conſiderable ſize to paſs, as I have known in many inſtances; but if the diſtention be carried beyond a certain degree, it is ſaid the tone of the part will be deſtroyed, and the patient ever remain ſubject to an involuntary diſcharge of urine, which is a greater evil than any of the common conſequences of lithotomy.

In the courſe of the *urethra*, and about the *meatus urinarius*, excreſcences ſometimes grow, which produce ſymptoms equally troubleſome, and ſimilar to thoſe which are cauſed by the ſtone or other diſeaſes in the bladder, for which they are often miſtaken. Theſe may be extirpated by the knife, by ligature, by cauſtic applications, or by wearing bougies, according to their ſize, or the part where they grow, which may render one method more convenient or preferable to the reſt. But theſe excreſcences are ſometimes not to be removed without much difficulty and trouble.

SECTION X.

THE *pruritus*, or itching of the external parts, is a complaint to which women are liable at any period of life; but it is moſt frequently attendant on the ſtate of pregnancy, of which it is one of the moſt troubleſome conſequences. If it affects the internal parts, or is exceſſive in its degree, it is ſaid to terminate in the *furor uterinus*. It is ſometimes occaſioned

occaſioned by a diſeaſe or affection of the bladder, and is then equivalent to the itching of the *glans penis* in men; but it more commonly proceeds from ſome affection of the *uterus*, having been moſt frequently obſerved to occur in pregnancy, eſpecially when the child was dead, or about the time of the final ceſſation of the *menſes*, when there was a diſpoſition to diſeaſe in the *uterus*.

The means uſed for the relief of the patient muſt depend upon the ſeat, the cauſe, and the degree of the complaint. When it happens during pregnancy, and at all other times, if attended with inflammation, it is neceſſary to bleed; to give gentle laxative medicines; and to uſe ſedative applications, of which perhaps the beſt is a weak ſolution of *ceruſſa acetata*, as a lotion; or a decoction of poppy heads, with a ſmall quantity of *ceruſſa acetata* diſſolved in it, as a fomentation. But of all the applications I have ſeen uſed, none has afforded more relief than cold water frequently applied with a ſponge, and occaſionally made colder with the addition of ice. More active applications are often preſcribed; but I have ſuſpected that theſe, in many caſes, rather aggravate than leſſen the complaint. If the patient

be

be pregnant, the attempt to cure it will be vain; and we muſt be ſatisfied with moderating it till ſhe is delivered, when it will generally ceaſe ſpontaneouſly. When this complaint is independent of pregnancy, originates from an affection of the *uterus*, and is of long continuance, the applications muſt be varied, and ſuch medicines given as promiſe relief by changing the ſtate of that part. Sulphur, taken internally, has ſometimes been of much ſervice; or applied to the part as a powder, liniment, or lotion. The burnt ſponge with nitre, or the *extractum cicutæ*, have alſo been uſed with advantage; together with a lotion compoſed of equal parts of the *aqua zinci vitriolati cum camphora* and roſe water; or the application of the *unguent. hydrargyr. fort.* I have alſo frequently given five grains of *Plummer*'s pill every night at bed-time for a month, and a pint of the decoction of *ſarſaparilla* daily; though there was no ſuſpicion of any venereal infection, of which the itching is, I believe, a very unuſual ſymptom. But when this complaint is occaſioned by an affection of the bladder, the conſtant or daily uſe of a bougie in the *urethra* has, in ſome caſes, effectually cured the patient.

SECTION

SECTION XI.

THE *hymen* is a thin membrane of a ſemilunar, or circular form, placed at the entrance of the *vagina*, which it partly cloſes. It has a very different appearance in different women; but it is generally, if not always*, found in virgins, and is very properly eſteemed the teſt of virginity, being ruptured in the firſt act of coition; and the remnants of the *hymen* are called the *carunculæ myrtiformes* †. The *hymen* is alſo peculiar to the human ſpecies; from which circumſtance a moral writer might draw inferences favourable to the eſtimation of chaſtity in women.

There are two circumſtances relating to the *hymen* which require medical aſſiſtance. It is ſometimes of ſuch a ſtrong ligamentous texture, that it cannot be ruptured, and prevents the connexion between the ſexes. It

* Membrana hymen, quæ utrum detur, necne, ſub judice lis olim fuit, hoc autem tempore in anatomia magis verſatis, nihil notius eſſe poteſt.—*Ruyſch. Theſ.* iii. No. xv.

† Hymenis diſſoluti reliquiæ, et corruptæ adeo pudicitiæ indicia.—*Haller. Phyſiolog.*

is alſo ſometimes imperforated, wholly cloſing the entrance into the *vagina*, and preventing any diſcharge from the *uterus*; but both theſe caſes are extremely rare.

If the *hymen* be of an unnaturally firm texture, but perforated, the inconveniencies thence ariſing will not be diſcovered before the time of marriage, when they may be removed by a crucial inciſion made through it, taking care not to injure the adjoining parts.

But the imperforation of the *hymen* will produce its inconveniencies, when the perſon begins to menſtruate *. For, the menſtruous blood being ſecreted from the *uterus* at each period, and not evacuated, the patient ſuffers much pain from the diſtention of the parts; many ſtrange ſymptoms and appearances are occaſioned, and ſuſpicions injurious to her reputation are often entertained. In a caſe of this kind, for which I was conſulted, the young woman, who was twenty-two years of age, having many uterine complaints, with the *abdomen* enlarged, was ſuſpected to be

* Menſes a membrana vulvam claudente ſuppreſſi, perque hujus inciſionem evacuati.—*Ruyſch. Obſ.* xxxii.—*and all the older writers.*

pregnant,

pregnant, though ſhe perſevered in aſſerting the contrary, and had never menſtruated. When ſhe was prevailed upon to ſubmit to an examination, the circumſcribed tumour of the *uterus* was found to reach as high as the navel, and the external parts were ſtretched by a round ſoft ſubſtance at the entrance of the *vagina*, in ſuch a manner as to reſemble that appearance which they have when the head of a child is paſſing through them; but there was no entrance into the *vagina*. On the following morning an inciſion was carefully made through the *hymen*, which had a fleſhy appearance, and was thickened in proportion to its diſtention. Not leſs than four pounds of blood, of the colour and conſiſtence of tar, were diſcharged; and the tumefaction of the *abdomen* was immediately removed. Several ſtellated inciſions were afterwards made through the divided edges, which is a very neceſſary part of the operation; and care was taken to prevent a re-union of the *hymen* till the next period of menſtruation, after which ſhe ſuffered no inconvenience. The blood diſcharged was not putrid or coagulated, and ſeemed to have undergone no other change, after its ſecretion, but what was occaſioned by the abſorption

ſorption of its more fluid parts. Some caution is required when the *hymen* is cloſed in thoſe who are in advanced age, unleſs the membrane be diſtended by the confined menſes, as I once ſaw an inſtance of inflammation of the peritonæum being immediately produced, of which the patient died as in the true puerperal fever.

The *caruncuiæ myrtiformes*, by their elongation and enlargement, ſometimes become very painful and troubleſome. Under ſuch circumſtances they may be managed, or extirpated, if requiſite, in the ſame manner as the diſeaſed *nymphæ*.

CHAPTER III.

SECTION I.

ON THE INTERNAL PARTS OF GENERATION.

THE internal parts of generation are the *vagina*, the *uterus*, the *fallopian* tubes, and the *ovaria*. The ligaments may be eſteemed appendages to the *uterus*.

That canal which leads from the *pudendum*, or external orifice, to the *uterus*, is called the *vagina*. It is ſomewhat of a conical form, with the narroweſt part downwards, and is deſcribed as being five or ſix inches in length, and about two in diameter. But it would be more proper to ſay, that it is capable of being extended to thoſe dimenſions; for, in its common ſtate, the *os uteri* is ſeldom found to be more than two inches from the external orifice, and the *vagina* is contracted as well as ſhortened.

The *vagina* is compoſed of three coats, the firſt or innermoſt of which is villous, interſperſed

ſperſed with many excretory ducts, and contracted into *plicæ*, or ſmall tranſverſe folds, particularly at the fore and back part; but, by child-bearing, theſe are leſſened or obliterated. The ſecond coat is compoſed of muſcular fibres and minute blood-veſſels; and the third or outer coat is derived from the cellular membrane, by which it is connected to the adjoining parts. A portion of the upper and poſterior part of the *vagina* is alſo covered by the *peritonæum*.

The entrance of the *vagina* is conſtricted by muſcular fibres, originating from the *rami* of the *pubis*, which run on each ſide of the *pudendum*, ſurrounding the poſterior part, and executing an equivalent office, though they cannot be ſaid to form, a true *ſphincter*.

The upper part of the *vagina* is connected to the circumference of the *os uteri*, but not in a ſtraight line, ſo as to render the cavity of the *uterus* a continuation of that of the *vagina*. For the latter ſtretches beyond the former, and, being joined to the *cervix*, is reflected over the *os uteri*; which, by this mode of union, is ſuſpended with protuberant lips in the *vagina*, and permitted to change its poſition in various ways and directions. When therefore theſe parts

parts are diſtended and unfolded at the time of labour, they are continued into each other, and there is no part which can properly be conſidered as the preciſe beginning of the *uterus*, or termination of the *vagina*.

The form of the *uterus* reſembles that of an oblong pear, flattened, with the depreſſed ſides placed towards the *pubis* and *ſacrum*; but, in the impregnated ſtate, it becomes more oval, according to the degree of its diſtention *.

For the convenience of deſcription, and for ſome practical purpoſes, the *uterus* is diſtinguiſhed into three parts; the *fundus*, body, and *cervix*. The upper part is called the *fundus*, the lower the *cervix*, and the ſpace between them, the extent of which is undefined, the body. The *uterus* is about three inches in length, about two in breadth at the *fundus*, and one at the *cervix*. Its thickneſs is different at the *fundus* and *cervix*, being at the former rather leſs than half an inch, and at the latter ſomewhat more; and this thickneſs is preſerved throughout pregnancy, chiefly by the enlargement of the veins and lymphatics,

* Facies uteri anterior planior eſt, convexior poſterius; latera pene in aciem extenuata.—*Roederer.*

there being little comparative alteration in the ſize of the arteries *. But there is ſo great a variety in the *uterus* in different women, independent of the ſtates of virginity, marriage, or pregnancy, as to prevent any very accurate menſuration.

The cavity of the *uterus* correſponds with the external form. That of the *cervix* leads from the *os uteri*, where it is very ſmall, though a little wider in the middle, in a ſtraight direction, to the *fundus*, where it is expanded into a triangular form, with two of the angles oppoſed to the entrance into the *fallopian* tubes. There is a ſwell, or fulneſs, of all the parts, towards the cavity, which is ſometimes diſtinguiſhed by a prominent line running longitudinally through its middle.

The villous coat of the *vagina* is continued over the *os uteri*, and lines the cavity of the *uterus* †. The internal ſurface of the *uterus* is corrugated in a beautiful manner, but the *rugæ*, which are longitudinal, leſſen as they

* Pars magna craſſitiei uteri ad venas pertinet.—*All the older Writers.*

† Pulpoſum magis quam vaginæ velamentum aliquoties reperi.—*Haller*; *Phyſiolog.*

advance

advance into the *uterus*, the *fundus* of which is ſmooth. In the intervals between the *rugæ* are ſmall orifices, like thoſe in the *vagina*, which diſcharge a mucus, ſerving, beſides other purpoſes, that of cloſing the *os uteri* very curiouſly and perfectly during pregnancy*.

The † ſubſtance of the *uterus*, which is very firm, is compoſed of arteries, veins, lymphatics, nerves, and muſcular fibres, curiouſly interwoven and connected together by cellular membrane. To theſe, according to ſome anatomiſts, are to be added glands, ligamentous and parenchymatous ſubſtances.

The arteries of the *uterus* are the ſpermatic and hypogaſtric.

The ſpermatic arteries ariſe from the anterior part of the *aorta*, a little below the emulgents, and ſometimes from the emulgents. They paſs over the *pſoas* muſcles, behind the *peritonæum*, enter between the two *laminæ*, or duplicatures of the *peritonæum*, which form the broad ligaments of the *uterus*, proceed to

* Adeo abundans ut totam cervicem repleat, et oſculum quaſi obturet.—*Haller. Phyſiolog. and many of the older Writers.*

† In gravida femina in laminas poſſit dividi, et in morbis in lacinias, ſquamaſque.—*Noortwyck. Uter. Gravid.* 1. 1. c.

the *uterus*, near the *fundus* of which they inſinuate themſelves, giving branches in their paſſage to the *ovaria* and *fallopian* tubes.

The hypogaſtric arteries ariſe from the internal iliacs, and, paſſing down the inſide of the *pelvis*, divide into three branches, the anterior of which retains the name of hypogaſtric; the middle is called the *pudica interna*; and the third the *ſciatica*. The firſt is the remnant of the umbilical artery, and is reflected over the ſide of the bladder, where it ſoon becomes impervious; the ſecond goes from the ſides of the *pelvis* to the edges of the *uterus*, which it enters at the upper part of the *cervix*, and then, penetrating the ſubſtance of the *uterus*, divides into two branches, the ſmalleſt of which runs along the *os uteri* to the *vagina*; but the larger paſſes with many convolutions to the upper part of the *uterus*, where its branches anaſtomoſe with thoſe of the ſpermatic artery. The hypogaſtrics in their paſſage to the *uterus* detach branches to the bladder and adjoining parts.

The veins which reconduct the blood from the *uterus* are very numerous, and their ſize in the unimpregnated ſtate, correſponds to that of the arteries; but their enlargement during

during pregnancy is ſuch, that the orifices of ſome of them, when divided, will admit of a quill, or the end of a ſmall finger. The veins anaſtomoſe in the manner of the arteries, which they accompany out of the *uterus*; and then, having the ſame names with the arteries, ſpermatic and hypogaſtric, the former proceeds to the *vena cava* on the right ſide, and on the left to the emulgent vein; and the latter to the internal iliacs.

From the ſubſtance and ſurfaces of the *uterus* an infinite number of lymphatics ariſe, which, following the track of the blood-veſſels, paſs to the glands, lying in an angle made by the departure of the emulgents from the trunk of the deſcending *aorta*, of which *Nuck* firſt gave a delineation.

The *uterus* is ſupplied with nerves from the lower meſocolic *plexus*, and from thoſe which paſs through the perforations of the *ſacrum*, which alſo ſend large branches to the bladder and *rectum*. The *ovaria* receive a few ſmall branches of nerves through the broad ligaments, but their principal ones are from the renal *plexus*. By the great number of nerves theſe parts are rendered extremely irritable; but it is by thoſe branches which the *uterus*

receives from the intercoſtal that the intimate conſent between it and various other parts is chiefly preſerved.

The muſcular fibres of the *uterus* have been deſcribed in a very different manner by anatomiſts, ſome of whom have aſſerted that its ſubſtance was chiefly muſcular, with fibres running in tranſverſe, orbicular, or reticulated order; whilſt others have contended that there were no muſcular fibres whatever in the *uterus*. In the unimpregnated *uterus*, when boiled for the purpoſe of a more perfect examination, the former ſeems to be a true repreſentation; and, when the *uterus* is diſtended towards the latter part of pregnancy, theſe fibres are very thinly ſcattered; but they may be diſcovered in a circular direction about the *cervix*, and ſurrounding the entrance of each fallopian tube in a ſimilar order. Yet it does not ſeem reaſonable to attribute the extraordinary action of the *uterus* at the time of labour to its muſcular fibres only, if we are to judge of the power of a muſcle by the number of fibres of which it is compoſed, unleſs it is preſumed that thoſe of the *uterus* are ſtronger than in common muſcles.

With

With reſpect to the glands of the *uterus*, theſe are not diſcoverable in its natural ſtate; but, from the number of lymphatics which proceed from it, and from its appearance in a morbid ſtate, there can be little doubt of their exiſtence. Reaſons might perhaps be advanced for an opinion that the *uterus* itſelf was a gland. By the term *parenchyma* has been underſtood a ſpongy ſubſtance, of a ſofter and leſs vaſcular texture than the other conſtituent parts of any of the *viſcera*, and of this there is ſaid to be a certain portion in the *uterus*: but modern anatomiſts do not allow it, or that there is any diſtinct ligamentous ſubſtance to be found in the ſtructure of the *uterus*. On this and many other occaſions one has to lament the want of preciſion in the terms uſed for the explanation of the ſame ideas, from which much confuſion has ariſen, and many diſputes have been carried on with unpardonable acrimony, not in the vindication of truth, but in the ſupport of words.

From the angles at the *fundus* of the *uterus* two proceſſes, of an irregularly round form, originate, called, from the name of the firſt deſcriber, the *fallopian* tubes, which are evidently continuations of the ſubſtance of the

uterus, but ſomewhat thinner. They are about three inches in length, and, becoming ſmaller in their progreſs from the *uterus*, have an uneven, fringed termination, called the *fimbriæ*. The canal which paſſes through theſe tubes is extremely ſmall at their origin, but it is gradually enlarged, and terminates with a patulous orifice, the diameter of which is about one third of an inch, ſurrounded by the *fimbriæ*. Through this canal the communication between the *uterus* and *ovaria* is preſerved. The *fallopian* tubes are wrapped in duplicatures of the *peritonæum*, which are called the broad ligaments of the *uterus*; but a portion of their extremities thus folded hangs looſe on each ſide of the *pelvis*.

The *ovaria* are two flat oval bodies, about one inch in length, and rather more than half in breadth and thickneſs, ſuſpended in the broad ligaments at about the diſtance of one inch from the *uterus*, behind, and a little below the *fallopian* tubes *.

To the *ovaria*, according to the idea of their ſtructure entertained by different anato-

* Ovaria in vetulis admodum exilia ut plurimum viſuntur. *Ruyſch. Obſ. Anatom.* xlv.

miſts,

miſts, various uſes have been aſſigned, or the purpoſe they anſwer has been differently explained. Some have ſuppoſed that their texture was glandular, and that they ſecreted a fluid equivalent to and ſimilar to the male *ſemen*; but others, who have examined them with more care, aſſert that they are *ovaria* in the literal acceptation of the term, and include a number of veſicles, or *ova*, to the amount of twenty-two of different ſizes, joined to the internal ſurface of the *ovaria* by cellular threads or pedicles; and that they contain a fluid which has the appearance of thin lymph. All have agreed that the *ovaria* prepare whatever the female ſupplies towards the formation of the *fœtus*; and this is proved by the operation of ſpaying, which conſiſts in the extirpation of the *ovaria*, after which the animal not only loſes the power of conceiving, but deſire is for ever extinguiſhed.

The outer coat of the *ovaria*, together with that of the *uterus*, is given by the *peritonæum*; and whenever an *ovum* has paſſed into the *fallopian* tube, a fiſſure may be obſerved at the part through which it is ſuppoſed to have been transferred. Theſe fiſſures healing, leave ſmall longitudinal cicatrices on the ſurface, which

which are ſaid to enable us to determine, whenever the *ovarium* is examined, the number of times a woman has conceived.

The *corpora lutea* are oblong glandular bodies, of a yellowiſh colour, found in the *ovaria* of all animals when pregnant, and, according to ſome, when they are ſalacious. They are ſaid to be the *calyces* from which the impregnated *ovum* has dropped; and their number is always in proportion to the number of conceptions found in the *uterus*. They are largeſt and moſt conſpicuous in the early ſtate of pregnancy, and remain for ſome time after delivery, when they gradually fade and wither till they diſappear. The *corpora lutea* are extremely vaſcular, except at their centre, which is whitiſh; and in the middle of the white part is a ſmall cavity, from which the impregnated *ovum* is thought to have immediately proceeded.

From each lateral angle of the *uterus*, a little before and below the *fallopian* tubes, the round ligaments ariſe, which are compoſed of arteries, veins, lymphatics, and nerves, arranged in a very curious manner, connected by cellular membrane, and much enlarged during pregnancy. They receive their outward

ward covering from the *peritonæum*, and pafs out of the *pelvis* through the rings of the abdominal mufcles to the groin, where the veffels fubdivide into fmall branches, and terminate at the *mons veneris* and contiguous parts. From the inſertion of theſe ligaments into the groin, the reaſon appears why that part generally ſuffers in all the diſeaſes and affections of the *uterus*; and why the inguinal glands are in women ſo often found in a morbid or enlarged ſtate.

The duplicatures of the *peritonæum*, in which the *fallopian* tubes and *ovaria* are involved, are called the broad ligaments of the *uterus*. Theſe prevent the entanglement of the parts, and are conductors of the veſſels and nerves, as the meſentery is of thoſe of the inteſtines. Both the round and broad ligaments alter their poſition during pregnancy *; appearing to riſe lower and more forward than in the unimpregnated ſtate. Their uſe is ſuppoſed to be that of preventing the deſcent of the *uterus*, and to regulate its direction when

* Ovariorum eorumque ductuum ſitus mutatur, tempore geſtationis et puerperii.—*Ruyſch.* Theſ. ix. No. xv.

it

it aſcends into the cavity of the *abdomen*, but whether they anſwer this purpoſe may be much doubted.

SECTION II.

THE diſeaſes of the internal parts of generation will be beſt underſtood if they are deſcribed in the order obſerved in the deſcription of the parts.

The diſeaſes of the *vagina* are, firſt, ſuch an abbreviation and contraction as render it unfit for the uſes for which it was deſigned; ſecondly, a coheſion of the ſides in conſequence of preceding ulceration; thirdly, cicatrices, after an ulceration of the parts; fourthly, excreſcences; fifthly, *fluor albus*.

The abbreviation and contraction of the *vagina*, which uſually accompany each other, are produced by original formation; and they are diſcovered at the time of marriage, the conſummation of which they ſometimes prevent. The curative intentions are to relax the parts by the uſe of emollient applications, and to dilate

dilate them to their proper ſize by ſponge, or other tents gradually enlarged. But the circumſtances which attend are ſometimes ſuch as might lead us to form an erroneous opinion of the diſeaſe. A caſe of this kind which was under my care, from the ſtrangury, from the heat of the parts, and the profuſe and inflammatory diſcharge, was ſuſpected to proceed from venereal infection; and the patient had been put upon a courſe of medicines compoſed of quickſilver for ſeveral weeks without relief. When ſhe applied to me I prevailed upon her to ſubmit to an examination, and found the *vagina* rigid, and ſo much contracted as not to exceed half an inch in diameter, and not more than one inch and an half in length. The repeated, though fruitleſs, attempts which had been made to complete the act of coition, had occaſioned a conſiderable inflammation upon the parts, and all the ſuſpicious appearances before mentioned. To remove the inflammation, ſhe was bled, took ſome gently purgative medicines, uſed an emollient fomentation, and afterwards ſome unctuous applications; ſhe was alſo adviſed to live ſeparate from her huſband for ſome time. The inflammation being gone, tents of various ſizes

were introduced into the *vagina*, by which it was diſtended, though not very amply. She then returned to her huſband, and in a few months became pregnant. Her labour, though ſlow, was not attended with any extraordinary difficulty; ſhe was delivered of a full ſized child, and afterwards ſuffered no inconvenience.

SECTION III.

By the violence or long continuance of a labour, by the morbid ſtate of the conſtitution, or by the negligent and improper uſe of inſtruments, an inflammation of the external parts, or *vagina*, is ſometimes produced in ſuch a degree as to endanger a mortification. By careful management this conſequence is uſually prevented; but, in ſome caſes, when the conſtitution of the patient was prone to diſeaſe, the external parts have ſloughed away, and in others equal injury has been done to the *vagina*. But the effect of the inflammation

tion is confined to the internal or villous coat, which is caſt off wholly or partially. An ulcerated ſurface being thus left, when the diſpoſition to heal has taken place, cicatrices have been formed of different kinds, according to the depth and extent of the ulceration; and there being no counteraction to the contractile ſtate of the parts, the dimenſions of the *vagina* become much reduced: or, if the ulceration ſhould not be healed, and the contractibility of the parts continue to operate, the ulcerated ſurfaces being brought together may cohere, and the canal of the *vagina* be perfectly cloſed. By proper attention at the time of healing, this complaint might alſo have been prevented or leſſened, and, as it differs in degree and ſituation, the inconveniences thence ariſing will vary in importance, and admit of relief with greater or leſs difficulty.

SECTION IV.

CICATRICES in the *vagina* very ſeldom become an impediment to the connexion between the ſexes; when they do, the ſame kind of aſſiſtance is required as was recommended in the natural contraction or abbreviation of the part, and I believe they always give way to the preſſure of the head of the child in the time of labour, though in many caſes with great difficulty. Sometimes the appearances may miſlead the judgment; for I was lately called to a woman in labour who was thought to have become pregnant, the *hymen* remaining unbroken. But, on making very particular inquiry, I diſcovered that this was her ſecond labour, and that the part which, from its form and ſituation, we ſuppoſed to be the *hymen*, with a ſmall aperture, was a cicatrice, or unnatural contraction of the entrance into the *vagina*, conſequent to an ulceration of the part after her former labour.

When

When the ſides of the *vagina* cohere together, it may be requiſite to ſeparate them with the knife; and, when they are in a healing ſtate, their reunion may be prevented by tents, or by a leaden canula of a proper ſize, introduced into, and worn in the *vagina*. But, if the coheſion has taken place far up in the *vagina*, the knife muſt be uſed with the utmoſt circumſpection, or irreparable injury may be done to the bladder, *rectum*, or ſome adjoining part. A patient under theſe circumſtances, who applied to me for relief, and in whom the menſtruous blood was ſecreted, though it could not be diſcharged, was adviſed to defer any operation; as I preſumed the menſtruous blood, at ſome future time, would protrude the cohering parts in ſuch a manner as to render the operation more ſecure, effectual, and eaſy. Accordingly, when they were ſtretched and protruded by the retained *menſes*, the point moſt eligible for perforation was indicated, and the operation was performed with great eaſe and ſafety. But in ſome caſes of coheſion I have not thought it juſtifiable to attempt to ſeparate the united parts by inciſion.

SECTION V.

FUNGOUS excreſcences ariſing from any part of the *vagina* or *uterus*, are diſtinguiſhed by the general term *polypus*. Theſe are of different ſizes, and may ſprout from any part of the cavity of the *uterus*, and perpend in the *vagina*; or from the *os uteri*; or from the *vagina*. The texture of the excreſcences is alſo very different, being in ſome caſes firm and fleſhy, and in others fungous and almoſt as ſoft as coagulated blood; ſome of them hang by a ſmall pedicle, and others have a broad baſis. But theſe adventitious ſubſtances have not been accurately deſcribed by anatomiſts, or claſſed by phyſiologiſts; and practitioners who are not very guarded are therefore often led into error in their treatment and prognoſtic of the event of ſuch caſes.

The cauſe of the *polypus* may be ſome accidental injury done to the part at the time of labour; or a ſpontaneous diſeaſe of the part itſelf, or of the conſtitution, as they are frequently found in women who have never been pregnant,

pregnant, and even in virgins. Thoſe which are of a ſmall ſize are no impediment to conception or parturition, at leaſt if they originate from the *os uteri* or *vagina*.

In the firſt ſtage the *polypus* may be accompanied with all thoſe ſymptoms which proceed from uterine irritation; and in its progreſs, with a mucous, ſanious, and afterwards a ſanguineous diſcharge, increaſing in quantity, and changing in appearance, according to the growth of the diſeaſe. By this diſcharge, and the continual pain, the patient may be reduced to extreme weakneſs, and if relief be not given by the extirpation of the *polypus* ſhe may periſh from the mere loſs of ſtrength, or by the production of other diſeaſes.

The *polypus* may be extirpated by ligature or exciſion, but the former is the preferable method; and the ligature is to be uſed in a ſimilar manner, and upon the ſame principle, as in the extirpation of naſal *polypi*. The difficulty lies in the proper application of the ligature, and this depends upon the diſtance of the part to be tied from the external orifice, and the thickneſs of the baſis of the *polypus*. If the circumſtances of the caſe will admit of delay, the operation will always be rendered

more eaſy by deferring it, as the tumour will deſcend lower, and the pedicle become longer and thinner. When the ligature is fixed, which it ſhould be as near to the root of the pedicle as poſſible, it muſt be drawn gradually tighter every day, by means of an inſtrument contrived for that purpoſe, called the *ligator*, till the excreſcence drops off, which uſually happens in four or five days; though the time will depend upon the firmneſs and thickneſs of the pedicle of the *polypus*; and, during the operation of the ligature, we muſt carefully watch any tendency there may be to inflammation in the *abdomen*. It ſhould be a general rule not to paſs a ligature for the extirpation of a *polypus*, unleſs we can feel the pedicle by which it grows, or we may be in danger of tying a part we did not intend; and we muſt diſtinguiſh the *polypus* from an inverted *uterus*, becauſe the two diſeaſes in ſome reſpects reſemble each other, and ſometimes they both exiſt together, even when the *polypus* is not large. Should the *polypus* ariſe from the ſubſtance of the part, with a baſe larger or as large as the excreſcence, the ligature cannot be fixed in the uſual manner; for it will either ſlide over it, or take a partial hold of the

polypus.

polypus. In ſuch caſes, attempts to extirpate the tumours do not ſucceed; for they have uſually a cancerous diſpoſition. In general thoſe caſes in which the *polypus* has a ſmall pedicle are more favourable, than thoſe in which the pedicle is of conſiderable thickneſs.

Before the ligature is paſſed we ſhould alſo be informed of the ſtate of the *uterus*, for, if that be diſeaſed, the patient will not profit by the extirpation of the *polypus*; and the practitioner may loſe his credit, though acting with the greateſt ſkill in the operation.

The *polypus* has ſometimes terminated favourably without aſſiſtance, or with aſſiſtance of a different kind. After a long continuance of the diſeaſe, which may not have been ſuſpected, or perhaps miſtaken for ſome other, the tumour has preſſed through the *vagina* and external orifice, and the pedicle being too weak to ſuſtain its weight, it has decayed and dropped away; or, when the tumour has puſhed through the external orifice, a ligature has been fixed round the pedicle, and the *polypus* has been perfectly and eaſily extirpated. But in ſuch caſes the *uterus* is more frequently inverted by delaying to extirpate the *polypus*

at a proper time, and the patient unneceſſarily expoſed to a continuance of ſuffering.

SECTION VI.

A mucous, ichorous, or ſanious diſcharge from the *vagina* or *uterus*, is called the *fluor albus* *. Theſe diſcharges are various in their degrees as in their kinds, from a ſimple increaſe of the natural *mucus* of the part, to that which is of the moſt acrimonious quality; but the firſt is not eſteemed a diſeaſe, unleſs it is exceſſive in its degree. It is the moſt frequent complaint to which women are liable, and is by them ſuſpected to be the cauſe of every diſeaſe which they may at the ſame time ſuffer; but it is generally a ſymptom of ſome local diſeaſe, or a conſequence of great debility of the conſtitution, though, when profuſe, it becomes a cauſe of yet greater

* *Lencorrhœa.* Nimia muci aut ichoris ex vulva profuſio.—*Vogel.* cxix.

Cachexia uterina, ſive fluor albus.—*Hoffman.*

weakneſs.

weakneſs. In many caſes the *fluor albus* is an indication of a diſpoſition to diſeaſe in the *uterus*, or parts connected with it, eſpecially when it is copious in quantity, or acrimonious in quality, about the time of the final ceſſation of the *menſes*; and before the uſe of ſuch means as are merely calculated for the removal of the diſcharge, we muſt endeavour to reſtore the *uterus* to a healthy ſtate.

The ſymptoms attending the *fluor albus*, whether it be an original diſeaſe, or a ſymptom of other diſeaſes, are very ſimilar. The complexion is of a pale, yellowiſh colour, the appetite is depraved, there is invariably a pain and ſenſe of weakneſs in the back and loins, the patient has conſtantly a feveriſh diſpoſition, with a waſting of the fleſh and reduction of the ſtrength, and ultimately becomes hectic or leucophlegmatic.

The method of relieving or curing the *fluor albus* muſt depend upon its cauſe, whether the diſcharge proceeds from the *uterus* or *vagina*. When it is occaſioned by general weakneſs of the conſtitution, all thoſe medicines which are claſſed under the general term of corroborants or tonics, eſpecially bark and preparations of iron, may be given, under a variety

variety of forms, with great advantage. But their effect is not immediate; and, previouſly to their uſe, it will be proper and neceſſary that the patient ſhould take ſome mild purgatives, and in all caſes where there is any feveriſh diſpoſition, ſhe ought to loſe ſome blood. Balſamic and agglutinating medicines of every kind, as the extract of bark with gum *olibanum* and all the claſs of terebinthinate balſams, are alſo frequently preſcribed, and often with much benefit. In ſome caſes, preparations of quickſilver, eſpecially *calomel* in very ſmall doſes, have been given with advantage, when there was no ſuſpicion of any venereal infection. Gentle emetics have been recommended, and are ſuppoſed to be of ſingular uſe, not only by cleanſing the *primæ viæ*, or by making a revulſion of the humours from the inferior parts, but by exciting all the powers of the conſtitution to more vigorous action. Cold bathing, partial or general, particularly in the ſea, has often been of eminent ſervice. In this, and all ſimilar complaints, good air, moderate exerciſe, nouriſhing and plain diet, and a regular manner of living, will of courſe be adviſed.

When

When there is reaſon to think that the complaint is local, and ariſes from the relaxation of thoſe orifices by which a neceſſary *mucus* is diſcharged on particular occaſions; or if the diſcharge ſhould continue after an amendment of the conſtitution, injections of various kinds may be uſed daily. But the ſafeſt and beſt are thoſe which are compoſed from aſtringent vegetables, as a ſtrong infuſion of green tea; proceeding cautiouſly to weak ſolutions of *ceruſſa acetata*, or *vitriolum album*, as is the practice in long continued defluxions upon the eyes. Though theſe applications cannot well be expected to produce an abſolute cure, they ſeldom fail to afford temporary benefit, which is a great comfort to the patient, and they may be continued or repeated without hazard.

SECTION VII.

THE *uterus* is liable to many diſeaſes, and, being a part with which the whole body is readily drawn into conſent, there is ſcarce a diſeaſe under which women have at any time laboured,

laboured, but what has been attributed to its influence: yet it is not proved that there is any eſſential difference in thoſe diſeaſes of women to which men are equally ſubject, though there is ſome variety in the ſymptoms. We ſhall confine our attention to the moſt obvious diſeaſes of the *uterus*, and begin with the *prolapſus* or *procidentia*, which very frequently occurs.

By the *prolapſus* is meant a ſubſidence or deſcent of the *uterus* into the *vagina*, lower than its natural ſituation, and it is termed a *procidentia* when the *uterus* is puſhed through the external orifice of the *pudenda* *. This ſometimes happens to ſuch a degree as to put on the appearance of an oval tumour growing from the external parts, depending very low between the thighs, cauſing great pain and uneaſineſs, and rendering the patient unable to perform the common offices of life. A moderate ſhare of circumſpection, eſpecially with regard to the ſtate of the *os uteri*, will enable us to diſtinguiſh the *procidentia* of the *uterus* from its inverſion, and from all reſembling diſeaſes.

* *Hyſteroptoſis.* Uteri vel vaginæ procidentia.—*Sauvag.* xlix.

There

There are many cauſes of the *prolapſus* or *procidentia* of the *uterus*; as long ſtanding during the time of pregnancy, carrying heavy burdens, an extreme degree of coſtiveneſs, and all ſudden and violent exertions of the body; whence they moſt frequently happen to women in the lower ranks of life. They may be occaſioned by the circumſtances of a labour, as the deſcent of the *os uteri* into the *pelvis*, before it is dilated; by the prepoſterous efforts of the woman in an erect poſition; by the rude and haſty extraction of the *placenta*, and by riſing too early after delivery. They may alſo be produced by mere relaxation of the parts, after a long-continued *fluor albus*, as unmarried women are ſometimes ſubject to them, though leſs frequently than thoſe who have had children. By the knowledge of the cauſes of theſe complaints, we are led to their prevention and cure; and it is worthy of obſervation, that, when a *prolapſus* or *procidentia* has been occaſioned by the circumſtances of one labour, they may be relieved, or perfectly cured, by care and long confinement of the patient in an horizontal poſition after the next. When women who

have

have a *prolapſus* are pregnant, the inconveniences are increaſed in the early part of pregnancy, becauſe the *uterus*, being enlarged, ſinks lower than uſual into the *vagina*; but in the latter part, they are leſſened, as it is then ſupported above the brim of the *pelvis*. Yet, when the *pelvis* is very capacious, and the parts much relaxed, the lower part of the *uterus*, including the head of the child, has in ſome caſes been puſhed through the external orifice, before the *os uteri* was dilated, even in the time of labour.

The *procidentia* is not, properly ſpeaking, a diſeaſe of the *uterus*, but a change of its poſition, cauſed by the relaxation or weakneſs of thoſe parts to which it is connected, and by which it ſhould be ſupported. It accordingly moſt commonly happens that the firſt tendency to it is diſcovered by the protruſion or fulneſs of the anterior part of the *vagina*, and ſometimes alſo the poſterior part of the *vagina* becomes tumid, forming a kind of pouch; and this happens in ſome caſes where there is no deſcent of the *uterus*. But, in the principal degrees of the *procidentia*, the poſition of the *uterus* and *vagina* is not only very much altered,

altered, but that of all the contiguous parts, eſpecially the bladder *.

The intentions in the cure of the *procidentia* are, to reſtore the *uterus* to its proper ſituation, and to retain or ſupport it when replaced.

The reduction of the parts to their ſituation is not uſually attended with much difficulty, even in the worſt degrees of this complaint. In ſome caſes, however, it is neceſſary, by bleeding, confinement in bed, gently-purgative medicines, and emollient fomentations, to leſſen the inflammation and tumefaction; and when the *procidentia* or *prolapſus* occur ſoon after delivery, gentle means can only be uſed with propriety, as the parts are often in too irritable and tender a ſtate to bear any other without miſchief. When the parts are replaced, it will ſometimes be proper to uſe local aſtringent and aromatic applications, in the form of a lotion or fomentation, conducted into the *vagina* by means of a ſyringe or ſponge. But theſe will generally fail to

* Maximam veſicæ partim ſecum trahit.—*Ruyſch. Advers. Dec.* 1. 6.—See Medical obſervations and Inquiries, vol. iii. caſe 1. By Dr. *Thomas White*, of *Mancheſter*.

anſwer our intention fully, and we ſhall be obliged to have recourſe to peſſaries, of which many have been contrived of various forms and ſubſtances.

The intention in the uſe of peſſaries is to ſupport the *uterus* in its ſituation, without injuring it, or the adjoining parts; but certainly many of the kinds now in common uſe are ill calculated for one or both theſe purpoſes, as they can neither be introduced or worn without inconvenience, and often fail to anſwer our intention. They are generally made of box or ebony wood, or of cork covered with wax, and lately of the elaſtic gum. By ſome the circular form is preferred; by others the oval; whilſt others are perſuaded that globular ones are the moſt effectual; and they are certainly the moſt eaſy when introduced, though they cannot be uſed by women who live with their huſbands. Much dexterity and judgment are alſo required in their introduction, for, if they are too ſmall, they will not remain in the *vagina*; and, if too large, they will inflame and ulcerate the parts, cauſing the ſtrangury, obſtinate coſtiveneſs, and many other painful ſymptoms. The ſize of thoſe firſt uſed ſhould be ſufficiently

ficiently large, and they may be gradually diminiſhed, till they are no longer neceſſary. When a peſſary has been introduced, it is requiſite that the patient ſhould, for ſome time, be kept quiet and in an horizontal poſition, by which the preſent inconveniences will be leſſened, and the good we expect to be derived from it will be increaſed; yet, there is no doubt but that we are often diſappointed in our expectations of the advantage to be gained by the uſe of peſſaries, from impatience or the want of attention in their application. Peſſaries, when introduced, are chiefly ſupported by the *perinæum*, but if this ſhould have been lacerated, the common ones cannot be uſed. A ſort has for ſuch caſes been contrived with ſtems, to which ligatures are to be fixed, and then brought forwards and backwards to a bandage paſſed round the waiſt. Theſe are always very troubleſome, and are therefore never recommended, unleſs no other kind can be worn, but I have never met with a caſe in which the globular peſſary could not be eaſily introduced and conveniently worn.

From the long continuance of a common flat peſſary in the *vagina*, and ſometimes from

the entanglement and ſtrangulation of the *os uteri* within the opening at its centre, there has been much difficulty when it was neceſſary to withdraw it. If it is poſſible to paſs a piece of tape through the circular opening, and if we pull in a proper direction by both ends of it, with a firm and gradually increaſed force, ſo as to give the parts time to diſtend, we can hardly fail of ſucceſs. But, if that is not poſſible, the rim of the peſſary muſt be broken, or divided by a pair of ſharp, ſtrong *forceps*, of the kind uſed by watch-makers*. The globular peſſary may at any time be extracted with a ſmall *vectis*.

It has been obſerved, that the uſe of peſſaries, except the globular ones, does not hinder the act of coition, or conception; and when a woman has a *prolapſus* it is of great ſervice that ſhe ſhould live with her huſband†.

An opinion was formerly entertained, that a *procidentia* of the *uterus* was beneficial in ſeveral other complaints to which women are liable, and that it was not proper to re-

* See Chapman's Treatiſe on Midwifery, chap. lxviii.

† Peſſaire n'empechent pas le femme d'uſer du coit, ni devenir groſſe.—*Mauriceau*, v. 1. l. 3. c. 6.

place

place it; but I have never ſeen any reaſon for this opinion, though the repoſition of the parts ſometimes occaſions a temporary uneaſineſs *. In ſome caſes it is alſo ſaid, that the *uterus* could not be returned, from its long continuance, or from the increaſed bulk of the neighbouring parts †; but I preſume that all ſuch caſes might have been managed by perſevering in the uſe of gentle evacuations, proper applications, and long confinement in an horizontal poſition.

SECTION VIII.

HYDATIDS ‡, or ſmall veſicles, hung together in cluſters, from one common ſtem, and containing a watery fluid, are ſometimes

* Contigit uteri prolapſus; quem ego affectum ſalutarem illi fore prædixi.—*Harv. Exercit. de Partu.*

† Reſtitui non ſemper debet, nec poteſt.—*Ruyſch. Advers.* ix. *Anat.* 9.

‡ *Hydatis.* Veſicula cuticularis humore aqueo plena.—*Cullen.* cxxi.

formed in the cavity of the *uterus*. Theſe have been ſuppoſed to proceed from *coagula* of blood, or portions of the *placenta*, remaining in the *uterus*; but there is generally reaſon to think that they are an original production of the *uterus*, independent of ſuch accidental circumſtances *.

The ſymptoms of this diſeaſe are ſuch as are common in all caſes accompanied with an increaſed degree of uterine irritation; and, as there is alſo a diſtention of the *abdomen*, from the enlargement of the *uterus*, it is not ſurpriſing that theſe caſes ſhould ſometimes be miſtaken for pregnancy. In the early part of the diſeaſe, the ſymptoms, though troubleſome, are not alarming; but before or about the termination of nine months, the *uterus* makes its efforts to expel them, and the attending circumſtances are ſimilar to thoſe of a labour. If the hydatids ſhould be expelled without the occurrence of any dangerous ſymptom, there is no occaſion for our aſſiſtance or interference. But if an hemorrhage

* Hæc retentæ moles placentæ, penitus amittens genuinam ſuam indolem, quia eſt merus vaſorum ſanguiferorum contextus, integro ſuo corpore mutatur in congeriem hydatidum.—*Ruyſch. Adv. Anat. Dec.* 2.

ſhould

ſhould attend, or if the action of the *uterus* ſhould be inſufficient for their expulſion, it behoveth us to make gentle attempts to extract them, that the *uterus* may be at liberty to contract, and the orifices of the veſſels be thereby leſſened. We muſt, however, act with great caution; for, by haſty and rude proceeding, we ſhould incur the danger of greater miſchief than we mean to avoid.

SECTION IX.

THERE are upon record many hiſtories of the dropſy of the *uterus*, which is deſcribed as a collection of water, or gelatinous fluid, in its cavity, the *os uteri* being ſo perfectly cloſed as to prevent its eſcape *. It is ſuppoſed to be occaſioned by an increaſed ſecretion, and a diminiſhed abſorption of lymph, as in collections of water in other cavities. The ſymptoms of this dropſy are the ſame as thoſe which occur in the caſe of the hydatids, and

* Aſcites Uterinus.—*Sauvag.* Hydrometra.—*Cullen.*

when the action of the *uterus* comes on, the patient is usually imagined to be in labour; but, after a sudden discharge of water, the *abdomen* subsides, and, though chagrined at her disappointment, she recovers her former health.

The common explanation of the manner in which the water is confined in the *uterus* seems unsatisfactory, and, in the few cases of this kind which I have seen, is not just. For in these, the water being discharged, a membranous bag was afterwards voided, which, when inflated, put on the form of the distended *uterus*, of which it appeared to be a lining; so that what has been called a dropsy of the *uterus* is, probably, no more than one large hydatid.

Another kind of dropsy has been mentioned as appertaining to the *uterus*. In this the water is originally contained in the cavity of the *abdomen*, and, being absorbed by the termination of the *fallopian* tubes, is conveyed to the *uterus*, from which it is discharged; but of this I have never seen any satisfactory proof.

SECTION X.

It has been ſaid, that wind may be collected and retained in the cavity of the *uterus* till it is diſtended in ſuch a manner as to reſemble pregnancy, and to produce its uſual ſymptoms. By the ſudden eruption of the wind, the tumefaction of the *abdomen* is removed, and the patient reduced to her proper ſize. Of this complaint I have never ſeen an example; but many caſes have occurred to me of temporary exploſions of wind from the *uterus* *. When no injury has been done to the parts in former labours, I preſume that this complaint happens to women with feeble conſtitutions and ſome particular debility of the *uterus*; it is reaſonable, therefore, to expect advantage from ſuch means as ſtrengthen the habit in general, or give energy to the *uterus* itſelf, of which one of the beſt means, is the injection of the Bath water. It is how-

* Phyſometra. Tympanites uteri.—*Cullen.* lxx.

Oedopſophia. Flatuum per urethram, vaginam, vel uterum, emiſſio.—*Sauvag.* xxxv.

ever

ever right for me to acknowledge that I have not been able in many caſes to render much ſervice to patients labouring under this complaint by any means I could deviſe.

SECTION XI.

By the term mole* authors have intended to deſcribe very different productions of, or excretions from, the *uterus*. By ſome it has been uſed to ſignify every kind of fleſhy ſubſtance, particularly thoſe which are properly called *polypi*; by others, thoſe only which are the conſequence of imperfect conception; and by many, which is the moſt popular opinion, every *coagulum* of blood, which continues long enough in the *uterus* to aſſume its form, and to have only the fibrous part, as it has been called, remaining, is denominated a mole.

There is ſurely much impropriety in including under one general name appearances

* *Mola.* Maſſa carnea, vaſculoſa, ex utero excreta. Ovum deforme.—*Vogel.* cccIx.

ſo

ſo contrary, and ſubſtances ſo different. Of the *polypus* we have already ſpoken. Of the ſecond kind, which has been defined as an *ovum deforme*, as it is the conſequence of conception, it might more juſtly be arranged under the claſs of monſters; and, though it has the appearance of being a ſhapeleſs maſs of fleſh, if examined carefully with the knife, various parts of a child may be diſcovered, lying together, apparently in confuſion. The pedicle alſo by which it is connected to the *uterus*, is not of a fleſhy texture, but vaſcular, and ſeems to be a true umbilical cord; there is likewiſe a *placenta* and membranes containing water. The ſymptoms attending the formation, growth, and expulſion, of this apparently confuſed maſs from the *uterus*, correſpond with thoſe of a well-formed child. With reſpect to the third opinion of a mole, an inciſion into its ſubſtance will diſcover its true nature; for, though the external ſurface appears to be fleſhy, the internal part is compoſed merely of coagulated blood *. As ſubſtances of this kind, which moſt commonly occur after delivery, would always be expelled

* Excretiones uterinæ, ſanguineæ, ſæpe imponunt pluribus.—*Ruyſch.*

by

by the action of the *uterus*, there ſeems to be no reaſon for a particular inquiry, if popular opinion had not annexed the idea of miſchief to them, and attributed their formation, or continuance in the *uterus*, to the miſconduct of the practitioner. Hence the perſuaſion aroſe of the neceſſity of extracting all the *coagula* of blood out of the *uterus*, immediately after the expulſion of the *placenta*, or of giving medicines to force them away; but abundant experience hath proved, that the retention of ſuch *coagula* is not productive of any danger, and that they are ſafely expelled by the action of the *uterus*, though at different periods after delivery.

SECTION XII.

THE *ovaria* are the ſeat of a particular kind of dropſy, which moſt commonly happens to women at the time of the final ceſſation of the *menſes*, though not unfrequently at a more early period of life. It is of the encyſted kind,

kind, the fluid being ſometimes contained in one cyſt, often in ſeveral; and, in ſome caſes, the whole tumefaction has been compoſed of hydatids not larger than grapes. Of theſe different kinds we may often be able to form a judgment by the evidence or obſcurity of the fluctuation, and by the inequalities of the *abdomen*.

From the veſicular ſtructure of the *ovaria* there may be ſome inherent diſpoſition to this diſeaſe, or they may be affected like any other gland in the body, as it often happens to women with ſtrumous conſtitutions. But this kind of dropſy has uſually been attributed to other cauſes; as accidents and rude treatment at the time of parturition, ſuppreſſion of the *menſes*, obſtructions of the *viſcera*, or accidental injuries of the part. The ſymptoms attending it, are pain in the lower part of the *abdomen*, with a circumſcribed tumour on one or both ſides, gradually extending higher up, and acroſs the *abdomen*, which, when there is a ſuppreſſion of the *menſes*, is often miſtaken for pregnancy; there is alſo, in ſome caſes, a ſwelling of the thigh or leg of the ſame ſide with the diſeaſed *ovarium*. In the early ſtate of the diſeaſe, this dropſy may be diſtinguiſhed from

from the *aſcites*, for which it is often miſtaken, by the circumſcription of the tumour; but when it is increaſed to a large ſize, unleſs it be of an irregular form, and we are acquainted with the early ſymptoms, the diſtinction is very difficult. It is to be obſerved that the ſecretion of urine is but little diminiſhed, and the conſtitution apparently little affected in the beginning of the dropſy of the *ovaria*; and that, even after a long continuance of it, the principal inconveniences ſeem to ariſe from the preſſure it makes, from the unwieldineſs of the patient, and from apprehenſion of future miſchief. It is alſo very remarkable, that this diſeaſe in many caſes proceeds ſo very ſlowly that twelve or fourteen years, or often a longer time, may paſs from its commencement to its greateſt enlargement; and that if one *ovarium* only be affected, the patient may conceive and bring forth healthy children.

In the beginning of this dropſy, when the increaſing *ovarium* is firſt perceptible through the integuments of the *abdomen*, there is often ſo much pain as to require repeated bleeding, fomentations, laxative medicines, and opiates to appeaſe it. I have alſo endeavoured to prevent

prevent or remove the firſt enlargement by a courſe of medicines, the principal of which was calomel, given for a conſiderable time in ſmall quantities, with an infuſion of burnt ſponge; or the *ferrum* tartariſatum, trying occaſionally what advantage was to be obtained from bliſters, from a plaiſter compoſed of gum ammoniacum diſſolved in the acetum ſcillæ, or laſtly by electricity. From all or ſome of theſe means I have frequently had occaſion to believe much preſent advantage was obtained, or much miſchief prevented; but when the diſeaſe has made a certain progreſs, though a variety of medicines and of local applications have been tried, no method of treatment has hitherto been diſcovered ſufficiently efficacious to remove it, unleſs by inciſion or extirpation, which have been recommended, though ſeldom practiſed*. The fluid once depoſited, ſeems to be out of the power of the circulation, its abſorption not being promoted by the uſe of any of thoſe evacuating medicines, which ſometimes prove ſucceſsful in the other kinds of dropſy, or by

* In the cccIxxxi number of the Philoſophical Tranſactions, there is a caſe of a dropſy of the *ovarium*, which was cured by an inciſion.

local applications, of which I have tried a great number. When the diſeaſe is ſo much increaſed as to occaſion difficulty of breathing or other untoward ſymptoms, recourſe muſt be had to the operation of the *paracenteſis*, by which preſent relief is afforded, and by a repetition of the ſame operation, as often as the return of the abdominal ſwelling to a certain ſize may require it, the life of the patient may be prolonged to extreme old age. Should there be any ſuſpicion that the water is contained in different cyſts, or that the tumour may be compoſed of hydatids, it is proper to inform the friends of the patient that the operation will not ſucceed, or not in a manner equal to our wiſhes; and it ſhould be eſtabliſhed as a general rule, that we be aſſured, by an examination *per vaginum*, that women are not pregnant, before this operation is performed, even ſuppoſing they have undergone the operation before; provided they are at a time of life and under circumſtances which juſtify any ſuſpicion of pregnancy. For, through the want of this circumſpection, deplorable and irremediable miſchief has in ſome caſes been done to the patient, and the profeſſion very much diſgraced.

SECTION

SECTION XIII.

THE *ovaria* are alſo ſubject, eſpecially a ſhort time after delivery, to inflammation, terminating in ſuppuration, and to ſcirrhous and cancerous diſeaſes, with conſiderable enlargement. In the former ſtate they generally adhere to ſome adjoining part, as the *uterus*, the *rectum*, or external integuments; and the matter is diſcharged from the *vagina*, by ſtool, or by an external abſceſs of the integuments of the *abdomen*. Theſe caſes always require much care and ſkilful management, but in general, inſtead of aiming to cure them, it will be moſt ſerviceable to attend to the ſymptoms, and by quieting theſe, and ſupporting the ſtrength, the conſtitution at length cures the diſeaſe. But in ſimple enlargements of the *ovaria*, they continue detached and free from any adheſion; and, ſinking lower down in the *pelvis* on one ſide, or in the hollow of the *ſacrum*, produce inconveniences according to their ſize and ſituation. Of thoſe by which the progreſs of a labour may be impeded, we ſhall ſpeak in the detail of the cauſes of difficult

cult labours; but an inſtance of a diſeaſed *ovarium*, occaſioning the ſymptoms of a retroverted *uterus*, is ſo well deſcribed in a caſe ſent to me by my very ingenious friend Mr. *Everard Home*, now one of the ſurgeons of *St. George*'s hoſpital, that I ſhall beg leave to relate it.

Suſannah Fletcher, in the twenty-third year of her age, had a ſuppreſſion of urine, which frequently required the uſe of the catheter. Not being able to ſupport the expence of medical attendance, ſhe obtained admiſſion into the *Glouceſter* infirmary, where having continued for ſeveral months, without any other than temporary relief, ſhe gave up all hope of being cured, and returned to her huſband. She ſoon became pregnant, and, in a ſhort time, was ſurpriſed to find that her complaint left her, though it returned immediately after her delivery. It diſappeared a ſecond time in the ſame manner, and under the ſame circumſtances. Her huſband went abroad while ſhe was pregnant, and, after her delivery, ſhe was obliged to go to ſervice for her maintenance; but the daily neceſſity ſhe was under of having the catheter introduced, rendering her unfit for that ſituation, ſhe was admitted

admitted a nurſe in the royal hoſpital at *Plymouth*, of which I was one of the aſſiſtant ſurgeons in *December* 1778.

She was then unable to void any urine without the catheter, ſhe was habitually coſtive, her ſtomach was eaſily diſturbed, and ſhe was ſubject to hyſteric fits. In all other reſpects ſhe was tolerably healthy, and menſtruated with regularity.

In *May* 1779, in the agitation of a violent fit, ſhe vomited a large quantity of blood; and this hemorrhage frequently returning ſhe died in the beginning of *June* following.

The body was opened in the preſence of ſeveral gentlemen belonging to the hoſpital.

All the *viſcera* of the *abdomen* were in a healthy ſtate, except the ſtomach and *duodenum*, which were ſomewhat inflamed on their external ſurface, and the former internally alſo near the *cardia*; but we could not diſcover the orifice of the veſſel which had been ruptured.

Examining the contents of the *pelvis* we found the *uterus* puſhed forward towards the *pubis*; and the right *ovarium*, which was enlarged beyond the ſize of a hen's egg, and lying between the *vagina* and *rectum*, had

formed a bed, and was ſo much fitted to that poſition, that it could not eaſily be retained in any other. The left *ovarium*, *uterus*, and bladder, were free from diſeaſe.

The ſituation of the right *ovarium* was no ſooner obſerved, than it occurred to me that it had produced the ſame effect as when the *uterus* falls back upon its *cervix* in the retroverſion of the *uterus*; and with this idea, all the ſymptoms of the diſeaſe under which the poor woman had laboured, the removal of the ſuppreſſion of urine during pregnancy, and its return after delivery, could be readily explained. The analogy between the ſymptoms of the retroverted *uterus*, and the effect produced by the diſeaſed *ovarium*, were in this caſe too obvious to eſcape obſervation; but if the cauſe of the diſeaſe had been diſcovered during the life of the patient, it would have been difficult to have afforded relief, unleſs ſome ſurgeon had been intrepid enough to have paſſed a trocar through the poſterior part of the *vagina* into the *ovarium*, and diſcharged the fluid which it was found to contain.

There have been inſtances of one of the *ovaria* paſſing under *Poupart*'s ligament into the

the groin, or through the tendinous opening of the oblique muſcles, where it has put on the appearance, and produced the ſame ſymptoms, as when a ſmall portion of the *omentum* or inteſtines is ſtrangulated: and relief has been obtained by the ſame mode of proceeding as if it were a real *hernia* of the inteſtine *.

It is very remarkable that, in diſeaſes of the *ovaria*, teeth, hair, bones, and other extraneous animal ſubſtances, are found in them ſo frequently, that there is ſcarce a collection of anatomical curioſities in which there are not various examples. Theſe ſubſtances have hitherto been conſidered as remnants or parts of an imperfect conception, but a celebrated anatomiſt of the preſent time, has fully proved that they may be formed without conception, or even any connubial intercourſe †.

* In Mr. *Pott*'s works there is a very curious caſe of this kind, in which both the *ovaria* were extirpated. The patient recovered, but never menſtruated afterwards.

† See Philoſophical Tranſactions vol. and a very excellent work juſt publiſhed, The Morbid Anatomy of ſome of the moſt important parts of the Human Body, by Dr. *Matthew Baillie*.

CHAPTER IV.

SECTION I.

THE principal parts contained in the cavity of the *pelvis* are, firſt, the *urethra*, which is connected with the internal ſurface of the *ſymphyſis* of the *oſſa pubis*, with its orifice terminating immediately below the inferior edge, and joined at its other extremity to the bladder, which, when filled with urine, aſcends into the cavity of the *abdomen*, in proportion to its diſtention, and reſts upon the upper edge of the *oſſa pubis*. Secondly, the *vagina*, or canal which leads from the *pudendum* to the *uterus*, paſſing obliquely upwards and backwards; connected poſteriorly with the lower part of the *rectum*, and anteriorly with the *urethra* and inner ſurface of the *oſſa pubis*, as is the *uterus*, in part, to the bladder. Thirdly, the *rectum*, or inteſtine, the poſterior part of which adheres to the hollow of the *ſacrum*. But we are not to conclude that any part of the

the cavity of the *pelvis* is unoccupied; for, beſides theſe principal parts, the nerves, and blood veſſels, ſome of which are of a conſiderable ſize, every ſpace between them is filled with cellular or adipoſe membrane; and it ſeems as if by the preſſure upon theſe, at the time of parturition, an effect equivalent to an abſolute enlargement of the cavity was produced.

The cavity of the *pelvis* is conſidered, by anatomiſts, as the inferior part of the cavity of the *abdomen*; but, in a deſcription of its contents, with a view to the practice of midwifery, it appears more convenient to ſpeak of them as diſtinct cavities, ſeparated by the *peritonæum*, which, deſcending from the fore part of the *abdomen*, paſſes over the *fundus* and poſterior part of the bladder, aſcends over the anterior part and *fundus* of the *uterus*, and then, making a deep inflection, covers the back part of the *uterus*, and the greateſt portion of the *vagina*. It then reverts over the anterior part of the *rectum*, and proceeds to form a lining to the cavity of the *abdomen*.

By this inflection of the *peritonæum*, the *uterus*, during pregnancy, is permitted to expand more freely, and to riſe without incon-

venience into the cavity of the *abdomen*. But from the ſame cauſe women become liable to various diſeaſes, to the retroverſion of the *uterus*, to the *hydrocele*, or dropſy of the *perinæum*, and to that ſpecies of *hernia* which is occaſioned by the deſcent of the inteſtines between the *vagina* and *rectum*. But quadrupeds, by their horizontal poſition, are exempt from every diſadvantage to which the inflection of the *peritonæum* may ſubject women.

By the term retroverſion, ſuch a change of the poſition of the *uterus* is underſtood, that the *fundus* is turned backwards and downwards upon its *cervix*, between the *vagina* and *rectum*; and the *os uteri* is turned forwards to the *pubis*, and upwards in proportion to the deſcent of the *fundus*, ſo that, by an examination *per vaginam*, it cannot be felt, or not without difficulty *, when the *uterus* is retroverted. By the ſame examination there may alſo be perceived a large round tumour, occupying the inferior part of the cavity of the *pelvis*, and preſſing the *vagina* towards the *pubis*. By an examination *per anum*, the ſame

* It is a true ſubverſion of the *uterus*, the *fundus* of which falls back upon the *vagina*.

tumour

tumour may be felt, preſſing the *rectum* to the hollow of the *ſacrum*; and if both theſe examinations are made at the ſame time we may readily diſcover that the tumour is confined between the *vagina* and *rectum*.

Beſides the knowledge of the retroverſion which may be gained by theſe examinations, it is found to be accompanied with other very diſtinguiſhing ſymptoms. There is in every caſe a ſuppreſſion of urine, with extreme pain, and by its continuance ſuch diſtention of the bladder, that the tumour formed by it in the *abdomen* often equals in ſize, and reſembles in ſhape, the *uterus* in the ſixth or ſeventh month of pregnancy. But it is neceſſary to obſerve, that the ſuppreſſion of urine is frequently abſolute only before the retroverſion of the *uterus*, or during the time it is retroverting; for, when the retroverſion is completed, there is often a diſcharge of ſome urine, ſo as to prevent an increaſe of the diſtention of the bladder, though not in a ſufficient quantity to remove it. There is alſo an obſtinate conſtipation of the bowels, produced by the preſſure of the retroverted *uterus* upon the *rectum*, which renders the injection of a clyſter very difficult, or even impoſſible. But it appears that all the painful

ſymptoms

ſymptoms are chiefly in conſequence of the ſuppreſſion of urine; for none of thoſe parts which are apt to ſympathiſe in affections or diſeaſes of the *uterus* are diſturbed by its retroverſion.

The retroverſion of the *uterus* has generally occurred about the third month of pregnancy, and ſometimes after delivery; it may likewiſe happen when the *uterus* is, from any cauſe, enlarged to the ſize it acquires about the third month of pregnancy, but not with ſuch facility as in the pregnant ſtate, becauſe the enlargement is then chiefly at the *fundus*. If the *uterus* is but little enlarged, or if it be enlarged beyond a certain ſize, it cannot well be retroverted; for, in the firſt caſe, ſhould the cauſe of a retroverſion exiſt, the weight at the *fundus* would be wanting to produce it; and in the latter the *uterus* would be raiſed above the projection of the *ſacrum*, and ſupported by the ſpine.

The ſuppreſſion of urine has hitherto been ſuppoſed to be the conſequence of the retroverſion of the *uterus*, which has been aſcribed to various accidental cauſes. But if we conſider the manner in which theſe parts are connected, and examine the effect produced by the inflation of the bladder in the dead ſubject,

ſubject, ſo as to reſemble, in ſome meaſure, the diſtention brought on by a ſuppreſſion of urine in the living, we ſhall be convinced that the *uterus* muſt be elevated before it can be retroverted *. Now, as there appears to be no cauſe, beſides the diſtention of the bladder, capable of elevating the *uterus*, and at the ſame time projecting its *fundus* backwards; and as ſuch elevation and projection neceſſarily follow the diſtention of the bladder, it is more reaſonable to conclude that the ſuppreſſion of urine precedes the retroverſion, if we do not allow it to be a cauſe without which the retroverſion cannot exiſt. Moreover, if the *uterus* is in a ſtate which permits it to be retroverted, when the bladder is much diſtended, a retroverſion is a neceſſary conſequence, or, may be produced by a very trifling accident. If a woman, for inſtance, about the third month of her pregnancy, has a ſuppreſſion of urine continuing for a certain time, and pro-

* By repeated inflations of the bladder, and then preſſing out the air in the dead ſubject, I could give a very good idea of the retroverſion of the *uterus*; and probably, if I could have had an opportunity of making the experiment in a ſtate of pregnancy, I might have ſucceeded in producing an actual retroverſion.

ducing

ducing a certain degree of diſtention of the bladder, we may be aſſured that the *uterus* is retroverted.

It would be vain and abſurd to contend for the opinion, that the ſuppreſſion of urine is the cauſe of the retroverſion of the *uterus*; for, were it not juſt, it would be contradicted by daily experience. But the matter no longer reſts upon the foundation of opinion or conjecture: for, from the firſt caſe in which I thought I had reaſon to ſuſpect it, I have ſo conſtantly obſerved it, either by the reſerve of women of ſuperior rank in life, or by the reſtraint of thoſe in inferior ſituations, neglecting or being prevented from attending to the calls of nature, that there does not remain a doubt concerning it. The fact hath alſo been proved in a variety of caſes by practitioners of the firſt eminence, who have ſupplied me with the moſt unqueſtionable teſtimonies of its truth; and, in this caſe, it is a matter of great importance to diſcover the cauſe of the diſeaſe, as the method of preventing it is thereby immediately pointed out.

But the preceding ſuppreſſion of urine may be overlooked, as there is not occaſion for it to be of long continuance in order to produce its

its effect; eſpecially in a woman who hath a capacious *pelvis*, in whom the retroverſion of the *uterus* is moſt likely to happen. It muſt alſo be obſerved, that though the ſuppreſſion of urine gives to the *uterus* its firſt inclination to retrovert, yet the poſition of the *os uteri* is ſuch, in the act of retroverting, that the tumour formed by the *fundus* is ſometimes ſo large, when actually retroverted, as to become, in their turn, cauſes of the continuance of the ſuppreſſion of urine.

Should any doubt remain of the cauſe of the retroverſion, it cannot, however, be diſputed but that all attempts to reſtore the *uterus* to its natural poſition, before the diſtention of the bladder is removed, muſt be fruitleſs, as the *uterus* will be irreſiſtibly borne down by the preſſure of the ſuperincumbent bladder. The firſt ſtep then to be taken for the relief of the patient, is to draw off the urine: yet there is always great difficulty in the introduction of the common catheter, becauſe the *urethra* is elongated, altered in its direction, and preſſed againſt the *oſſa pubis* by the tumour formed by the retroverted *uterus*; and many women, when the *uterus* was retroverted, have loſt their lives from the want of

expertneſs in introducing the catheter. But the attending inconveniencies may be avoided or ſurmounted by the uſe of the flexible male catheter, ſlowly conducted through the *urethra*. I ſay ſlowly, becauſe, whatever catheter is uſed, the ſucceſs of the operation, and the eaſe and ſafety of the patient, very much depend upon this circumſtance; for if we affect to perform it with haſte and dexterity, or ſtrive to overcome the difficulty by force, we ſhall be foiled in the attempt, or it will be ſcarcely poſſible to avoid doing injury to the parts. The catheter ſhould not be carried farther into the bladder, when the urine begins to flow, unleſs it ceaſes before the diſtention be removed; which, in ſome caſes, happens in ſuch a manner, as to give us the idea of a bladder divided into two cavities. External preſſure upon the *abdomen*, when the catheter is introduced, will alſo favour the diſcharge of the urine, after which the patient is ſenſible of ſuch relief as to conclude that ſhe is wholly freed from her diſeaſe. A clyſter ſhould then be injected, and repeated if neceſſary, to remove the *fæces* which may have been detained in the *rectum* before, or during the continuance of the retroverſion.

But

But though the diſtention of the bladder is removed by the diſcharge of the urine, and all the ſymptoms occaſioned by it, relieved, the *uterus* continues retroverted. It has been ſaid that the ſtate of retroverſion was injurious to the *uterus* itſelf, and would produce ſome dangerous diſeaſe in the part: it has alſo been aſſerted that, if the *uterus* was permitted to remain in that ſtate, it would be locked in the *pelvis* by the gradual enlargement of the *ovum*, in ſuch a manner as to render its repoſition impracticable, and the death of the patient an inevitable conſequence. On the ground of theſe opinions we have been taught that it is neceſſary to make attempts to reſtore the *uterus* to its natural ſituation, with all expedition, when the urine is diſcharged, and that we are to perſevere in theſe attempts till we ſucceed. In caſe of failure by plain and common methods, the means we have been adviſed to purſue, many of which are ſevere, and ſome extremely cruel, as well as uſeleſs, would beſt deſcribe the dread of thoſe conſequences which have been apprehended from the retroverſion.

For both thoſe conſequences there cannot ſurely be reaſon to fear. If the *uterus* be injured,

jured, there will be no farther growth of the *ovum*; and if the *ovum* ſhould continue to grow, it is the moſt infallible proof that the *uterus* has not received any material injury. But it is remarkable that, in the moſt deplorable caſes of the retroverſion of the *uterus*, thoſe which have terminated fatally, the death of the patient has been diſcovered to be owing to the injury done to the bladder only. It is yet more remarkable, in the multiplicity of caſes of this kind which have occurred, many of which have been under the care of practitioners who had no ſuſpicion that the *uterus* could be retroverted, and who would of courſe make no attempts to replace it, that there ſhould be ſo few inſtances of any injury whatever. Yet every patient under theſe circumſtances muſt have died, if their ſafety had depended upon the reſtoration of the *uterus* to its proper ſituation by art; attention having only been paid to the moſt obvious and urgent ſymptom, the ſuppreſſion of urine, and to the prevention of the miſchief which might thence ariſe.

Opinions are often vain and deceitful, but, with reſpect to the matter now under conſideration, they have alſo been very prejudicial. For

For it has been proved in a variety of caſes, many of which were attended to with particular care by unprejudiced and very capable witneſſes, that the *uterus* may remain in a retroverted ſtate for many days or weeks, without any other detriment than what may be occaſioned by the temporary interruption of the diſcharges by ſtool or urine: and, contrary to all expectation, it hath been moreover proved, that the *uterus*, when retroverted, will often be gradually, and ſometimes ſuddenly, reſtored to its poſition without any aſſiſtance, provided the cauſe be removed by the occaſional uſe of the catheter. It appears that the enlargement of the *uterus*, from the increaſe of the *ovum*, is ſo far from obſtructing the aſcent of the *fundus*, that it contributes to promote the effect, the diſtention of the *cervix* becoming a balance to counteract the depreſſion of the *fundus*; for I have found no caſes of the retroverted *uterus* admit of a repoſition with ſuch difficulty as in women who were not pregnant, in whom the *uterus* underwent no change.

Allowing that we have the power of returning the *uterus* when retroverted to its proper ſituation; knowing alſo that it may

continue retroverted without any immediate ill conſequences; and preſuming that it is capable of recovering its ſituation by the gradual exertion of its own power, at leaſt that ſuch recovery is an event which ſpontaneouſly follows the change which the part naturally undergoes; it is neceſſary to conſider the advantages and diſadvantages which may reſult from our acting according to either intention.

If the attempt to replace the *uterus* be inſtantly made after the urine is diſcharged, ſo much force will often be required for the purpoſe as will, notwithſtanding all precaution, give much pain, induce the hazard of injuring the *uterus*, and often occaſion abortion; which, in ſome inſtances, is alſo ſaid to have happened when little force was uſed, and even when the *uterus* was actually retroverted: but of this I cannot help entertaining ſome doubt. It muſt likewiſe be granted that, in ſome caſes, by paſſing two or more fingers into the *vagina*, the *fundus* of the *uterus* may be raiſed beyond the projection of the *ſacrum* without much force; though, in others, repeated attempts, with various contrivances, and with the patient at the ſame time placed in the

moſt favourable poſitions, have failed to procure ſucceſs.

If, on the contrary, we are perſuaded that the *uterus* will ſuſtain no injury by its retroverſion, and that there is no danger of its being locked in the *pelvis*, but that it will be gradually reſtored to its natural poſition without aſſiſtance, we have then only to guard againſt thoſe inconveniences which may be occaſioned by the diſtention of, or the preſſure made by the bladder and *rectum*. By the former of theſe we ſhall be reduced to the neceſſity of uſing the catheter daily or frequently, which is generally done without difficulty, except the firſt time it is introduced. This operation, it muſt be acknowledged, is, in all caſes, very diſagreeable and troubleſome to the patient; and, in ſome ſituations, the neceſſity we are under of performing it ſo often, and for ſo long a time, is in itſelf a ſufficient reaſon for our attempting to replace the *uterus* ſpeedily. But the ſuppreſſion of urine does not always remain through the continuance of the retroverſion of the *uterus*: for, when the diſtention of the bladder has been removed for a very few days, its power of action will be reſtored, and the patient will

become able to void her urine without further aſſiſtance, during the retroverſion.

We may then bring the matter to this iſſue: if the *uterus*, when retroverted, can be replaced by art, without the exertion of much force, or the riſk of miſchief, the immediate repoſition, though not abſolutely neceſſary, is at all times an event to be wiſhed; as farther apprehenſion and trouble are prevented, the ſafety of the patient enſured, and her mind quieted. But, when the *uterus* cannot be replaced without violence, it ſeems more juſtifiable to wait for its return, and to ſatisfy ourſelves with watching and relieving the inconveniences produced by the retroverſion. We ſhall alſo find, that the longer the attempt to replace the *uterus* is delayed, the more eaſy the operation will ultimately be, and the ſucceſs more certain; though I have known many caſes in which the *uterus* was repeatedly retroverted in a ſhort time after its repoſition, without any additional miſchief.

To thoſe who have been accuſtomed to conſider the retroverſion of the *uterus* as productive of immediate and urgent danger, it may ſeem ſtrange to aſſert that, when the urine is diſcharged, the patients are often able

to return to the common buſineſs of life without danger, and with very little trouble, if no eſſential injury has been done to the bladder by the greatneſs or long continuance of the diſtention. I do not mean that they will be as perfectly eaſy as if the *uterus* was not retroverted; but the inconveniences they may ſuffer will be trifling and of ſhort duration, compared with thoſe which might ariſe from violent attempts to replace it.

I ſhall conclude theſe remarks with an obſervation which will appear extraordinary. From the time when the firſt accounts of the retroverſion of the *uterus* were given in this country, which were written with great accuracy, but with too much apprehenſion, till within theſe few years, it was eſteemed to be a caſe of great danger, and to require the moſt delicate management; but, at the preſent time, no practitioner of credit conſiders it as a caſe of any difficulty, or feels any ſolicitude for the event, provided he be called to the relief of the patient before any miſchief is actually done*.

* See Medical Obſervations and Inquiries, Vol. IV. and ſubſequent volumes.

SECTION II.

ANOTHER complaint ſimilar to that of which we have been ſpeaking, and which has been called a retroflection of the *uterus*, has occurred in practice. By this term is implied ſuch an alteration in the poſition of the parts of the *uterus*, that the *fundus* is turned downwards and backwards between the *rectum* and *vagina*, whilſt the *os uteri* remains in its natural ſituation; an alteration which can only be produced by the curvature or bending of the *uterus* in the middle, and in one particular ſtate; that is, before it is properly contracted when a woman has been delivered.

A ſuppreſſion of urine exiſting at the time of delivery, and continuing unrelieved afterwards, was the cauſe of the retroflection of the *uterus* in the ſingle caſe of this kind of which I have been informed by Dr. *Thomas Cooper*; and the ſymptoms were like thoſe which were occaſioned by the retroverſion.

When the urine was drawn off by the catheter, which was introduced without difficulty,

culty, the *fundus* of the *uterus* was eaſily replaced by raiſing it above the projection of the *ſacrum*, in the manner adviſed in the retroverſion, and it occaſioned no farther trouble.

SECTION III.

THAT affection of the *vagina* and *perinæum* which I have termed the *hydrocele*, or dropſy of the *perinæum*, is not an original diſeaſe, but a ſymptom of the *aſcites*, occaſioned by the preſſure of the water contained in the cavity of the *abdomen*, upon the inflected part of the *peritonæum* between the *vagina* and *rectum*. The former, having no ſupport from the adjoining parts, and being unable to ſuſtain the weight of the water which reſts upon it, after a certain time, begins to yield; and the preſſure being continued or increaſed, the poſterior part of the *vagina* is diſtended, puſhed down, and at length protruded through the external parts, in ſuch a manner as to invert the *perinæum*. A tumour is then formed

at the poſterior part of the *pudendum*, of which the *vagina* is the external coat, and the *peritonæum* the internal. This appearance occurs too rarely, or the inſtances recorded are too few, to juſtify the eſtabliſhment of any general mode of practice; but, by the hiſtory of the following caſe, we may be enabled to make a diſtinction of this particular tumour, and of the method of treatment which it may ſometimes be requiſite and adviſable to purſue.

In the year 1772 I attended a patient who was then pregnant of her ſixth child. She had a ſlight cough, ſome difficulty in breathing, and an obtuſe pain in her right ſide. Her eyes had a yellow tinge, and ſhe had an uneaſy ſenſation as if her ſtomach was ſwelled. Her urine, which was voided in ſmall quantities, was high-coloured, and depoſited a red ſediment. Her pulſe was quick, ſhe had a conſtant thirſt, and very little appetite. She reckoned that ſhe was in the ſeventh month of her pregnancy.

Six ounces of blood were taken from the arm, a ſaline draught was given, with a few grains of rhubarb, twice daily or occaſionally. She was adviſed to drink whey or ground-

ivy

ivy tea with milk, and ſweetened with honey, for her common drink, to live chiefly upon fruit and vegetables, and to go into the country. There ſhe reſided two months, during which time little alteration was made in her diet and medicines; but the *abdomen* was diſtended to an unuſually large ſize. She then returned to her family in town in daily expectation of being delivered.

In the courſe of my attendance ſhe had often mentioned a complaint which was very troubleſome, and occaſioned great ſolicitude. This, from her deſcription, I conſidered as a *prolapſus* of the *uterus*; and, expreſſing a deſire to be more particularly informed, ſhe permitted me to examine it.

I was ſurpriſed to find a tumour of the ſize, and ſomewhat of the form, of an inflated calf's bladder, riſing from the *perinæum* internally, paſſing forwards and outwards, ſo as perfectly to occlude the entrance into the *vagina*. By preſſure the tumour leſſened, and by a continuance of the preſſure it entirely diſappeared, leaving a looſe pouch within, and on the back part of the *vagina*. When ſhe ſtood up the tumour returned to its former ſize and ſituation; but when ſhe lay down,

and

and the preſſure was renewed, it again diſappeared. It had not the feel of *omentum* or inteſtine, but clearly contained a fluid which muſt communicate with ſome other cavity. I afterwards examined the *abdomen*, and could readily perceive a fluctuation in it. A doubt then aroſe whether ſhe was with child; but, by an examination *per vaginam*, I could diſcover the head of a ſmall child reſting upon the *os pubis*.

The peculiarity of this tumour, its receſſion when preſſed, and its return when the preſſure was removed and the patient ſtood upright, together with the aſſurance of there being water contained in the cavity of the *abdomen*, were preſumptive proofs that there muſt be a communication between the tumour and that cavity; and this communication could not be explained ſo ſatisfactorily as by ſuppoſing that the water had inſinuated itſelf between the *vagina* and *rectum*, and, by reſting upon, had at length protruded the poſterior part of the *vagina*.

If this opinion was juſt, it might yet be debated, what was the moſt reaſonable method to be purſued for the relief of the patient; or whether it would not be more prudent to defer

fer all attempts till ſhe was delivered. Several gentlemen of the firſt eminence in the profeſſion were conſulted upon the occaſion, and it was agreed that we ſhould wait till ſhe was delivered, before the treatment of her other complaints was taken into conſideration.

About three weeks after this time her labour came on. The child being ſmall, and preſenting naturally, it was ſoon expelled, the tumour yielding gradually to the preſſure of the head of the child; though it appeared that the expulſion was completed by the action of the *uterus* only, the abdominal muſcles being too much diſtended to contribute any aſſiſtance. The *placenta* came away with great eaſe, and ſhe had no complaint till the fourth day after her delivery, when, after a few looſe ſtools, her ſtrength failed, and ſhe expired.

After her death I was very deſirous of knowing the truth of the opinion which had been entertained concerning her caſe; but her friends would not conſent that the body ſhould be opened. They however permitted me to examine the tumour. A trocar being puſhed into it, upwards of a quart of water was immediately diſcharged. The

water

water then came away more ſlowly; but I obſerved that the *abdomen* ſubſided in proportion to the water diſcharged through the *canula* of the trocar.

Mr. *Watſon*, a ſurgeon of great experience and ability, who ſaw this patient, informed me that he had met with a ſimilar caſe in a woman who was not pregnant. He tapped the tumour with a ſmall trocar, and left the *canula* remaining in the orifice for ſeveral days. The water continued to drain away till the *abdomen* was perfectly empty. This woman recovered, and had no return of the dropſy.

I lately attended a patient who had a tumour of the ſame kind as that above deſcribed, with Mr. *Daviſon*, ſurgeon in Chancery-lane. But as ſhe had been many times tapped before in the common way with ſucceſs, I was afraid to recommend his making the puncture in the tumour, leſt danger ſhould be incurred by an attempt to procure more perfect or permanent benefit.

SECTION IV.

By the deſcent of the inteſtines, or *omentum*, between the *uterus* and *rectum* is conſtituted a particular kind of *hernia*, of which the caſes recorded are very few *. The inconveniencies thence ariſing will depend upon the bulk of the tumour formed and the compreſſion which the parts thus ſituated may undergo. The methods by which relief is to be obtained by art will immediately occur to every practitioner, as they conſiſt in making all prudent and reaſonable attempts to replace the diſarranged parts, and keeping them in their proper ſituation when replaced. It is happy for the patient that no immediate bad conſequences are likely to follow this complaint, though, under particular circumſtances, it may prove fatal, as in the following caſe, which was communicated to me by Dr. *Maclaurin*.

* Elytrocele. *Vogel.* ccccii. Hernia in vagina uteri eminens.

A ſervant

A ſervant in a gentleman's family in a ſtate of perfect health, was ſuddenly ſeized with all the ſymptoms of a ſtrangulated *hernia*, though from the moſt accurate inquiry and examination, it did not appear that ſhe then, or at any preceding time had a *hernia*. All the means uſed for her relief were ineffectual, and ſhe died on the third day of her illneſs. Leave being obtained to inſpect the body, a conſiderable portion of inteſtine was found lying between the *uterus* and *rectum*, in a gangrenous ſtate; and it was confined and compreſſed in this ſituation by a membranous bridle, which paſſed from the *fundus* of the *uterus* to the oppoſite part of the *rectum*.

CHAPTER IV.

SECTION I.

ON MENSTRUATION.

FROM the *uterus* of every healthy woman who is not pregnant, or who does not give ſuck, there is a diſcharge of blood, at certain periods, from the time of puberty to the approach of old age; and, from the periods or returns of this diſcharge, it is called Menſtruation.

There are ſeveral exceptions to this definition. It is ſaid that ſome women never menſtruate, their conſtitutions or ſtructure not requiring or allowing of this diſcharge. Some menſtruate while they continue to give ſuck, and others are ſaid to menſtruate during pregnancy; but of this I have never known an example. Some are ſaid to menſtruate in early infancy, and others in old age; but ſuch diſcharges may, I believe, with more propriety,

priety, be called morbid, or ſymptomatic; and when the female conſtitution from any cauſe is diſpoſed to or requires a ſanguineous diſcharge, it is commonly made from the veſſels of the *uterus*. There are alſo many varieties with reſpect to the periods and appearance of the diſcharge, from permanent cauſes or accidental influences; but the definition is generally true.

At whatever time of life this diſcharge comes on a woman is ſaid to be at puberty, though of this it is a conſequence, and not a cauſe. The early or late appearance of the *menſes* may depend upon the climate, the conſtitution, the delicacy or hardineſs of living, and upon the manners of thoſe with whom young women converſe *. There ſeems to be an analogy between the effect of heat upon fruits and the female conſtitution, with reſpect to menſtruation, for the warmer the climate the ſooner the *menſes* appear. In *Greece*, and other hot countries, girls begin to menſtruate at eight, nine, and ten years of age; but advancing to the northern climes, there is a gradual protraction of the time till we come to *Lapland*, where women do not menſtruate

* *Rouſſeau.*

till

till they arrive at maturer age, and then in ſmall quantities, at long intervals, and ſometimes only in the ſummer*. But, if they do not menſtruate according to the genius of the country, it is ſaid they ſuffer equal inconveniencies as in warmer climates, where the quantity diſcharged is much greater, and the periods ſhorter. In this country girls begin to menſtruate from the fourteenth to the eighteenth year of their age, and ſometimes at a later period, without any ſigns of diſeaſe; but if they are luxuriouſly educated, ſleeping upon down beds, and ſitting in hot rooms, menſtruation commences at a more early period.

Many changes in the conſtitution and appearance of women are produced at the time of their firſt beginning to menſtruate. Their complexion is improved, their countenance is more expreſſive and animated, their attitudes graceful, and their converſation more intelligent and agreeable; the tone of their voice becomes more harmonious, their whole frame, but particularly their breaſts, are expanded and enlarged, and their minds are

* *Linnæi* Flora Lapponica; under the article *Muſcus*.

no longer engaged in childiſh purſuits and amuſements *."

The difference in the time of life when the *menſes* appear has been aſſigned as the reaſon why women, in hot climates, are almoſt univerſally treated as ſlaves, and why their influence is ſo powerful and extenſive in cold countries, where perſonal beauty is in leſs eſtimation †. In hot climates women are in the prime of their beauty when they are children in underſtanding; and when their underſtanding is matured, they are no longer the objects of love. In temperate climates their perſons and their minds acquire perfection at the ſame time; and the united power of their beauty and faculties is irreſiſtible.

Some girls begin to menſtruate without any preceding indiſpoſition, but there are generally appearances or ſymptoms which indicate the change that is about to take place. Theſe

* Nec minus notum eſt, quanta virgini alteratio contingat, increſcente primum et tepefacto utero; pubeſcit nempe, coloratior evadit, mammæ protuberant, pulchrior vultus renidet, ſplendent oculi, vox canora, inceſſus, geſtus, ſermo, omnia decora fiunt.—*Harv. Exercitat. de Partu.*

† *David Hume*; but I do not remember in what part of his works.

are

are uſually more ſevere at the firſt than in the ſucceeding periods, and they are ſimilar to thoſe produced by uterine irritation from other cauſes; as pains in the back and inferior extremities, complaints of the *viſcera*, with various hyſteric and nervous affections. Theſe commence with the firſt diſpoſition to menſtruate *, and continue till the diſcharge comes on, when they abate or diſappear; returning, however, in ſome women, at every period during life.

The quantity of blood diſcharged at each evacuation depends upon the climate and conſtitution, and it varies in different women in the ſame climate; or, in the ſame women at different periods. But there is a common quantity to which, under the like circumſtances, women approach, and it may be eſtimated in this manner. Suppoſing the quantity to be about eighteen ounces in *Greece*, and two ounces in *Lapland*, there will be a gradual alteration between the two extremes, and in this country it will amount to about ſix ounces.

* Ante menſes conſtanter ſatis, humor ſeroſus albicans effluit, etiam aliquot menſibus priuſquam ſanguis ſequator.—*Haller. Phyſiolog.*

There is alſo a great difference in the time required for the completion of each period of menſtruation. In ſome women the diſcharge returns preciſely to a day or an hour, and in others there is a variation of ſeveral days, without inconvenience. In ſome it is finiſhed in a few hours, and in others it continues from one to ten days; but the intermediate time, from three to ſix days, is the moſt uſual.

There has been an opinion, probably derived from the Jewiſh legiſlator and afterwards adopted by the Arabian phyſicians, that the menſtruous blood poſſeſſed ſome peculiar malignant properties. The regulations which have been made, in ſome countries, for the conduct of women at the time of menſtruation, the expreſſions uſed, the diſpoſal of the blood diſcharged, the complaints of women attributed to its retention, and the effects enumerated by grave writers, indicate the moſt dreadful apprehenſions of its baneful influence. Under peculiar circumſtances of health, or ſtates of the *uterus*, or in hot climates, if the evacuation is ſlowly made, the menſtruous blood may become more acrimonious or offenſive than the common maſs, or any other ſecretion from it; but

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in this country and age, no malignity is ſuſpected; the menſtruous woman mixes in ſociety as at all other times; and there is no reaſon for thinking otherwiſe than that this diſcharge is of the moſt inoffenſive nature *.

At the approach of old age women ceaſe to menſtruate, but the time of the ceſſation is commonly regulated by the original early or late appearance of the *menſes*. With thoſe who began to menſtruate at ten or twelve years of age, the diſcharge will often ceaſe before they arrive at forty; but if the firſt appearance was protracted to ſixteen or eighteen years of age, independently of diſeaſe, ſuch women may continue to menſtruate till they have paſſed the fiftieth, or even approach

* Penis cum menſtruata concumbentis excoriatur, ſi novella vitis eo tangatur, in perpetuum læditur, ſteriles fiunt tactæ fruges, moriuntur inſita, exuruntur hortorum germina; ſi mulier prægnans alterius menſtrua ſupergrediatur, aut illis circumlinatur, abortum facit; ei autem quæ uterum non geſtat, concipiendi ſpem adimit; purgantis ſpiritus et vapor ab ore, ſpecula atque eboris nitorem obſcurat; guſtatus hic ſanguis canes in rabiem agit, homines vero diris cruciatibus affligit, comitialem morbum, pilorum effluvium, aliaque elephanticorum vitia: idcirco a veteribus inter venena relatus; pari malignitate exiſtimatur, atque ſanguinis elephantici potus.—*De Graaf*, p. cxxiv.

the ſixtieth year of their age. But, in this country, the moſt frequent time of the ceſſation of the *menſes* is between the forty-fourth and forty-eighth year, after which women never bear children. By this conſtitutional regulation of the *menſes* the propagation of the ſpecies is, in every country, confined to the moſt vigorous part of life; had it been otherwiſe children might have become parents, and old women might have had children, when they were unable to ſupply them with nouriſhment.

When women are deprived of the common uterine diſcharge, they are ſometimes liable to periodical emiſſions of blood from the noſe, lungs, ears, eyes, breaſts, navel, and almoſt every other part of the body*. Theſe have been deemed as deviations of the *menſes*, and communicated with the moſt ſcrupulous exactneſs, as if ſome great advantage was to be obtained by our knowledge of them. But the propriety of conſidering them in this point of view ſeems very doubtful, and I ſuſpect that

* Illa (menſtrua) per vomitum, alvum, urinam, per oculos, nares, aures, gingivas, mammas, umbilicum, minimum manus digitum, ac alias inſuetas corporis partes interdum promanare.—*De Graaf*, p. cxxix.

they

they generally ought rather to be eſteemed as diſcharges belonging to ſome diſeaſe under which the patient may labour, or to the ſtate ſhe is in; and that they often proceed from cauſes totally independent of thoſe of menſtruation, as hemorrhages of every kind, in either ſex, are frequently obſerved to be periodical.

Some men have alſo had a periodical diſcharge of blood from various parts of the body, but generally from the hemorrhoidal veſſels. We might ſuppoſe that ſuch conſtitutions reſembled thoſe of women, though the eſſential peculiarity on which this depends cannot be diſcovered.

SECTION II.

THE cauſes of menſtruation have been divided into efficient and final, and though little has been ſaid upon this ſubject which is likely to procure any practical advantage, ſufficient attention has been paid both to the diſcovery of the cauſe and end of menſtruation; and,

where our ſenſes have failed to procure evidence, the imagination hath been called to their aid. To unſophiſticated obſervation, and to a mere relation of facts, or the inferences plainly to be deduced from them, men are unwilling to ſubmit, as the powers of the imagination are by ſuch proceeding checked or ſuppreſſed, the want of underſtanding is concealed, and the parade of learning is loſt. Hence a multitude of opinions are formed and transferred by the writers of one age to be controverted by thoſe of the next; and we are amuſed or perplexed, but not inſtructed. Of this truth there will not be a doubt, if we conſider for a moment the number of opinions which have devolved upon us, with reſpect to menſtruation and conception; the fallacy of which it would be the buſineſs of one man's life to confute. But, though we are not to be immerged in ſuch inquiries, a curſory view of what has been ſaid of the cauſes of menſtruation ſeems neceſſary, to preſerve the unity, as it may be called, even of a practical diſcourſe.

It has been ſaid, after *Ariſtotle*, that the fluids of the human body were, like the

ocean, influenced according to the phaſes of the moon, and that menſtruation reſembled the tides. This diſcharge has been attributed to a *plethora* of the conſtitution, or of the *uterus*; to a ferment generated in the *uterus*; or to ſome humour of the conſtitution, as the bile*, producing this ſpecific effect upon the *uterus*. The diſcharge has been aſſerted, by ſome, to come from the veins of the *uterus*; by others from the arteries; and by others it is ſaid to be poured from cavities or receptacles in the ſubſtance of the *uterus*, calculated to contain a certain quantity of blood, which was gradually collected in the courſe of a month. Some have preſumed that it was a ſimple diſcharge of blood, others that it was a ſecretion; ſome that it was a conſtitutional diſcharge, and others that it was merely local.

That menſtruation is not occaſioned by the moon, or any general phyſical cauſe, is evident from the circumſtance of women menſtruating at every moment of its increaſe or decline; and if this reaſon was admitted, it would prove that men and animals ſhould alſo menſtruate. It is not probably occaſioned by

* *Charlton—Drake.*

plethora,

plethora, as the loſs of ſeveral times the quantity of blood diſcharged in menſtruation, from the arm, or any other part of the body, does not prevent or interrupt the flowing of the *menſes*; and in thoſe complaints which ariſe from obſtructions of the *menſes*, greater relief is afforded by a few drops of blood from the *uterus* itſelf, than by ten times the quantity from any other part. There ſeems to be no reaſon for the opinion of any fermenting principle being the efficient cauſe of menſtruation, no part of the *uterus* appearing fitted for its ſecretion or reception; and the opinion of bile acting with any peculiar influence upon the *uterus* was aſſumed, becauſe of the reſemblance between the ſymptoms ariſing from an exceſs or defect of bile, and thoſe depending on menſtruation; together with the influence which thoſe of bilious conſtitutions feel at the time of menſtruation. But this reaſon, like ſome of the former, would prove too much for the intended purpoſe, if it was admitted.

Among the early cultivators of anatomy, it ſeems to have been thought of great importance to decide from what veſſels the menſtruous blood was diſcharged, ſome contending

ing that it was from veins *, and others ſtrenuouſly maintaining that it was from arteries †, the opinion of there being receptacles in the *uterus* for its collection is of a modern date ‡. This latter cannot be true, as, from the examination of the *uteri* in women, at every intermediate period, ſuch receptacles could not have been overlooked if they had exiſted. From the appearance of the menſtruous blood in a healthy woman, and from that of the veſſels by which it is diſcharged, which evidently run in a tortuous manner during the act of menſtruation at leaſt, many have not heſitated to pronounce it arterial.

The menſtruous diſcharge has commonly been conſidered ſimply as blood, though of a different kind from the general maſs, as it has been obſerved not to coagulate ‖. All diſcharges of blood, in which there were *coagula*,

* Ex venis uterum petentibus, menſtruas purgationes evacuari indubitatum eſt, at quomodo fiat, et per quas potiſſimum venas, &c. ambigas.—*Veſalius*, lib. v. cap. xv.

† Sanguis exit de corpore per dilatatas tectas arterias naturaliter, in menſtruorum excretione, in fæminis.—*Ruyſch. Epiſtola ad Boerhaavium.*

‡ Syſtem of the Womb.—*Simſon.*

‖ *Haller* has quoted *Dionis* for this obſervation, but I could not find it in any part of his works.

have

have therefore been diſtinguiſhed from menſtruation, and aſſigned to ſome other cauſe. Whether menſtruation ought to be eſteemed a ſecretion ſimilar to that made by other glands of the body, and does not coagulate becauſe it is eſſentially different from blood, which I believe; whether the coagulation is prevented by a mixture with the diſcharge from the mucous glands; or whether it is a ſecretion from the *uterus* peculiar to that part, without analogy or reſemblance to that of any other part, may be proved by future obſervations and experiments.

The various opinions of menſtruation being a local or a conſtitutional diſcharge, may continue to be ſupported by thoſe who think them of conſequence. Every diſcharge is local, though its effect muſt be conſtitutional; but it does not appear that the ſymptoms of the ſuppreſſion of the *menſes* ſupply a ſtronger argument in favour of the latter opinion, than the regurgitation of bile upon the ſkin, or its diſcharge by urine when the natural paſſage is obſtructed.

SECTION III.

NUMEROUS as the opinions have been of the efficient cauſe of menſtruation, two only have been entertained of its final cauſe; firſt, that it was deſigned to preſerve the *uterus* in a ſtate fit for conception; ſecondly, that this blood, being more in quantity than was neceſſary for the ordinary purpoſes of the conſtitution, became, during the ſtate of pregnancy, nouriſhment for the *fœtus*, without any reduction of the ſtrength of the parent.

The firſt of theſe opinions, I believe, is not controverted, obſervation having fully proved that women who do not menſtruate from the *uterus*, or who are not in a ſtate diſpoſed to menſtruate, cannot conceive; even though they ſhould have a periodical diſcharge of blood from any other part of the body. Hence we may conclude, whether menſtruation be neceſſary for the conſtitution of a woman or not, that it is a circumſtance on which the due and healthy ſtate of the *uterus* very much depends. It has alſo been obſerv-

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ed that all animals, at the time of their being falacious, or in a ſtate fit for the propagation of the ſpecies, have a diſcharge equivalent to menſtruation, which is generally mucous; but, in ſome inſtances, in very hot ſeaſons, and climates, becomes, in the greater number of them, ſanguineous.

Of the truth of the opinion, that the menſtruous blood contributes to the formation or nutriment of the *fœtus*, there is much reaſon to doubt. The former ſeems to have been founded on the obſervation that women who did not menſtruate could not conceive; and this, if carried to its full extent, might have led to another concluſion, that the time of menſtruation was moſt favourable to conception; which is allowed not to be juſt, there being the readieſt diſpoſition to conceive ſoon after a period of menſtruation. As to the ſhare which the menſtruous blood might have in the nouriſhment of the *fœtus*, as all animals, whether menſtruating or not, ſupply their conception with nouriſhment of a proper kind, and in a ſufficient quantity to bring them to perfection, we may be permitted to conclude that it is by ſome common principle. If there had been a gradual abatement of the diſcharge,

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in proportion to the increaſe of the *fœtus*, its nouriſhment might have been preſumed to be one of the final cauſes of menſtruation. But, as there is an inſtant and a total ſuppreſſion of the *menſes* when a woman has conceived, they muſt either be ſuperfluous in the early, or deficient in the advanced ſtate of pregnancy.

The mucous diſcharge from the *uteri* of animals proves that they are in a ſtate favourable to the propagation of their ſpecies; and the menſtruous diſcharge is a proof of the ſame in women, as far as the *uterus* is concerned. For the reaſon of this difference we are to ſearch in the ſtructure of the *uteri* of the different claſſes of animals. The deſire of procreation exiſts in animals only at certain ſeaſons of the year; by theſe it is regulated in ſuch a manner, that the offspring will be produced at the time when they are likely to ſuffer the leaſt injury from the climate in which they are to live, ſo that it is accommodated to every climate; unleſs the genuine nature of the animal be changed by luxurious treatment, or by defect of nouriſhment. Women, on the contrary, having every month that diſcharge which proves them capable of conceiving, propagate their ſpecies at every

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ſeaſon of the year, and the gratification of the attendant deſire, when enjoyed with prudence, may be eſteemed a peculiar indulgence granted by Providence to mankind.

SECTION IV.

ALL the common circumſtances attending menſtruation have been well and fully deſcribed by various authors, but as I have very often obſerved a ſubſtance expelled with the menſtrual diſcharge, which has hitherto eſcaped notice, and as I apprehend the knowledge of this ſubſtance may be of uſe in practice, I feel it incumbent on me to deſcribe it.

In the examination of that diſcharge for the purpoſe of inveſtigating the ſtate of the *uterus* and the diſcovery of ſome complaints thereon depending, a membranous ſubſtance was often ſhewn me, which was uſually conſidered as the token of an early conception, or as the caſual form of coagulated blood. But on examining this ſubſtance with more attention,

tion, I conſtantly found that one ſurface had a flocky appearance, and the other a ſmooth one; that it had in all reſpects the reſemblance of that membrane which *Ruyſch* had called the villous, of the formation of which *Harvey* has given a deſcription, and which the late Dr. *Hunter* at length deſcribed with his uſual preciſion and called the *decidua*. To put the matter out of doubt, about four years ago I requeſted the favour of Dr. *Baillie* to examine ſome portions of it, and he agreed with me in thinking it ſimilar to the *decidua*. As the firſt caſes in which this membrane was diſcharged, were thoſe of women who were married, a doubt aroſe in my mind whether it was not really a conſequence of early conception, but I have lately had the moſt undoubted proofs that it is ſometimes diſcharged by unmarried women, and may be formed without connubial communication; and that the *uterus* has, occaſionally or conſtantly, in ſome women, the property of forming it, at, or in the interval between, the periods of the menſtrual diſcharges. It ſeems particularly neceſſary to eſtabliſh this fact, as the appearance of the membrane has more than once given riſe to erroneous opinions and unjuſt aſperſions. Nor

is this the only circumſtance in which, ſome women, at each period of menſtruation, have ſymptoms like thoſe which accompany pregnancy or parturition.

In every caſe in which this membrane has been diſcharged the women have menſtruated with pain, and the diſcharge has flowed ſlowly and apparently with difficulty till the membrane was come away, which in ſome caſes has been in ſmall flakes, and in others in pieces equal to the extent of half the cavity of the *uterus*, of which they retained the ſhape. I ſuſpect, but my experience does not enable me to decide, that this membrane is expelled in every caſe of habitual painful menſtruation.

No woman in the habit of expelling this membrane, has been known to conceive, and this obſervation leads me to ſpeak of the means which have been uſed for making ſuch a change in the ſtate of the *uterus*, that it ſhould be diveſted of the property of forming this membrane at the time of menſtruation.

There does not appear any external peculiarity of conſtitution, or diſpoſition to any other complaint in many of thoſe who have been liable to the formation of this membrane, which is in fact a proper office performed at an improper time.

time. Recourſe has been generally had to preparations of quickſilver, chiefly to calomel given ſometimes as active purges, and ſometimes in ſmall quantities continued ſo long as to raiſe a ſlight ſalivation. Together with the calomel I have directed a large doſe of the *Tinctura Cinchonæ Ammoniata* to be given twice in the courſe of the day; the infuſion of burnt ſponge with bark; myrrh and the different preparations of iron, and the *Tunbridge* or *Spa* waters; in ſhort every medicine which could have the power of altering the ſtate of the glandular ſyſtem in general, or that of the *uterus* in particular, has been tried, but not often with ſucceſs. I think I have in one inſtance known the uſe of an injection chiefly compoſed of the *Aqua Zinci Vitriolati cum Camphora* remove this complaint.

SECTION V.

ALL women have an opinion that menſtruation is to them a cauſe of diſeaſes from which men are exempt; and their apprehenſions of danger are chiefly confined to the times of the firſt appearance, and of the final ceſſation of

the *menſes*. It is not however proved that more women ſuffer at the time of puberty than men, though there may be ſome difference in their diſeaſes; nor is it decided that thoſe diſeaſes, which occur at the time of the final ceſſation of the *menſes*, are more frequent or more dangerous than thoſe to which men are liable at an equivalent age. Some advantage ſeems to be derived to women from their capability to menſtruate, eſpecially to thoſe whoſe conſtitutions or particular ſituations require diſcharges of blood for their relief; for ſuch, at all periods of life, are uſually made with great facility from the veſſels of the *uterus*; whereas, in men, theſe evacuations often happen from parts which ſuſtain much conſequent injury. The circumſtances attending menſtruation are, however, ſometimes ſuch as to require medical aſſiſtance, and theſe I ſhall conſider in the following order; firſt, obſtruction of the *menſes*; ſecondly, exceſs of the *menſes*; thirdly, painful menſtruation; and then I ſhall ſpeak of the treatment which may be proper at the time of the final ceſſation of the *menſes*.

By the term obſtruction is properly underſtood the defect or failure of the appearance of the

the *menſes*, at a time of life when they might be expected; and by ſuppreſſion, a total ſtoppage of the menſtruous diſcharge which has before appeared*. But the terms are indiſcriminately uſed.

Theſe have generally been eſteemed original diſeaſes, producing many troubleſome, and ſometimes dangerous conſequences; but the moderns have, with more propriety, conſidered them as ſymptoms of ſome diſeaſe with which the conſtitution was primarily affected. But, in ſome caſes, the ſuppreſſion of the *menſes* ſeems to be an original affection, often, though not univerſally, ſucceeded by a certain train of untoward ſymptoms; for it appears, in ſome women, to be a ſimple interruption of the diſcharge, not neceſſary for the conſtitution at ſome particular times, and when the interruption happens to thoſe who are married it ſometimes gives fallacious hopes of pregnancy. The preciſe reaſon of this temporary ſuppreſſion it would be difficult to inveſtigate; but I have obſerved it to happen,

* Chloroſis. *Cullen.* G. xlv. Dyſpepſia, vel rei non eſculentæ deſiderium, cutis pallor vel decoloratio, venæ minus plenæ, corporis tumor mollis, aſthenia, palpitatio, menſtruorum ſæpe retentio.

Amenorrhæa. *Cullen*, cix. Menſium ſuppreſſio.

together with a reduction of the ſize of the breaſts, in very chaſte women, who have been under the neceſſity of living ſeparate from their huſbands.

As very different diſeaſes may become cauſes of the ſuppreſſion of the *menſes*, and as this may in different conſtitutions produce very oppoſite effects, it is not extraordinary that we ſhould find thoſe ſymptoms, which have been deſcribed as attendant on the ſuppreſſion of the *menſes*, ſo numerous and ſo unlike. But the two principal diſtinctions are to be made from the appearance of the patients, ſome of whom have a pale leucophlegmatic look, with every conſequence and indication of want of power and energy in the conſtitution, and a fulneſs of vapid fluids; but others have a florid complexion, with ſigns of a hectic diſpoſition. To either of theſe ſtates may be joined all the various ſymptoms which ariſe from uterine diſturbance.

In the obſtruction of the *menſes*, with a pale complexion, a variety of medicines have been given, which were ſuppoſed to poſſeſs the properties of immediately influencing the *uterus*, and of promoting the menſtruous diſcharge by ſome ſpecific operation. But ſpeculative differences

differences have been loſt in the uniformity of practice; for thoſe who have differed widely in their theories of menſtruation, and in their opinions of the operation of the medicines preſcribed, have agreed as to the individual medicines which they recommended; and it was of no importance to the patient whether the effect was produced by ſome ſpecific operation, or was ſecondary to an alteration made upon the conſtitution. Every medicine which has the power of ſtrengthening or invigorating the habit, bitters, aromatics, and preparations of iron, become eventually promoters of the menſtruous diſcharge. But, previous to their uſe, it will, in general, be neceſſary to give a gentle emetic and laxative medicines, for the purpoſe of freeing the conſtitution from the load of inactive fluids, and of cleanſing the *primæ viæ*, by which the operation of ſuch medicines will be rendered more effectual. Of theſe, the preparations of iron are ſuppoſed to be the moſt powerful and beſt adapted to the caſe; and they may be given in a variety of forms and quantities, alone or joined with bitters and aromatics, provided the patient has no fever. The chalybeate waters of our own country, or thoſe of *Spa*,

are univerſally proper. In ſome caſes tepid bathing, or *pediluvia*, are of ſervice; and in others bathing in the ſea: and I have obſerved that the guides to the ladies continue to go into the water, during the time of menſtruation, without any inconvenience.

Medicines of this claſs do not always produce the menſtruous diſcharge, or its return, though they ſcarce ever fail to improve the health. In the conſtitutions of ſome women there is an idioſyncraſy which withſtands the effect of ſuch medicines as are generally found to anſwer certain intentions; and yet the ſame end may be gained by ſome other medicine, in general leſs efficacious. Different preparations of quickſilver have ſometimes been given with advantage in this complaint. The root of madder has been adviſed, either in one or more large doſes, about the time when the *menſes* are expected, or to the quantity of half a dram twice or three times daily in the intervals *. Repeated emetics, which are ſuppoſed to operate, not by cleanſing the *primæ viæ* only, but by agitating and calling forth the powers of the conſtitution to more vigorous action, are ſometimes ſucceſsfully

* See *Riverius*, and, before him, *Sennertus*.

uſed,

uſed. Electricity, directed to the region of the *uterus* and *ovaria*, has lately been practiſed and recommended by men of reputation; and often, I believe, with ſucceſs.

In the ſuppreſſion of the *menſes*, with a pale complexion, the diet ſhould be generous, and wine may be allowed. Exerciſe of every kind is proper; but it ought not to be greater than the patient can bear without fatigue, as great exertions have ſometimes produced immediately dangerous, and even fatal effects. They may often be invited by dancing or riding on horſeback, and theſe ſeem beſt adapted to their complaint, though I have lately ſeen ſome inſtances in which *ſwinging* anſwered better than any other exerciſe.

The ſuppreſſion of the *menſes* with a florid complexion, is uſually combined with ſymptoms very different from thoſe which occur when it is pale, and a method of treatment reverſe to the former is required; for the colour of the cheeks is, in theſe caſes, the fluſh of diſeaſe, and not the glow of health. Such patients have uſually a ſlight cough, pains in the breaſt, ſome difficulty of breathing, fever, and other ſigns of a conſumptive tendency. In ſuch ſituations, inſtead of purſuing

ſuing the former intention, with the view of producing or promoting the menſtruous diſcharge, we muſt regard the diſeaſe, and endeavour to give relief by repeated bleeding in ſmall quantities, by antiphlogiſtic and emollient medicines, by a vegetable diet, and by repoſe, forbidding all exerciſe but that of the moſt eaſy kind, and then the ſuppreſſion of the *menſes* may come under contemplation. The *tinctura Melampodii* has been ſtrongly recommended; but the principal good which it does ſeems to be produced by its operation as a gentle laxative.

The *menſes* are ſometimes ſuppreſſed by ſudden expoſure to cold, or by violent exerciſe and agitation during the time they are flowing. Even in theſe caſes the ſuppreſſion is ſubſequent to the attack of ſome diſeaſe; as a pleuriſy, peripneumony, acute rheumatiſm, inflammation of the *uterus*, or the like; and under ſuch circumſtances the ſame treatment is to be adviſed as the particular nature of the diſeaſe may require, without regard to the *menſes* *.

* I have been informed that, in ſuppreſſions or deviations of the *menſes*, injections *per vaginam*, in the compoſition of which there is ſome preparation of quickſilver, are of particular ſervice; but of ſuch I have not had any experience.

SECTION

SECTION VI.

THE exceſs or profuſion of the menſtruous diſcharge may be of two kinds *. It may conſiſt either in the frequency of its return, or the ſuperfluity of its quantity at each period; and the cauſes aſſigned for either of theſe are, too great fulneſs of the conſtitution, or the thin and acrimonious ſtate of the blood; together with external accidents. Inſtances occur in practice in which women menſtruate at each period a larger quantity than their conſtitutions are able to afford; yet thoſe caſes, which are uſually reduced under the term profuſion of the *menſes*, are very rare; what are called ſuch being either hemorrhages accompanying early abortions, or morbid or ſymptomatic diſcharges from the *uterus*. The ſymptoms of the profuſion of the *menſes* are the ſame as thoſe which are produced by he-

* Menorrhagia.—*Cullen*, G. xxxvii. Dorſi, lumborum, ventris, parturientium inſtar dolores; menſtruorum copioſior, vel ſanguinis e vagina præter ordinem fluxus.

morrhages

morrhages from any other part of the body, with ſome peculiar to affections of the *uterus*.

If there ſhould be merely too large a quantity of menſtruous diſcharge at each period, or too frequent returns, ſuch medicines and regimen as ſtrengthen the conſtitution or amend the health will be proper; and when theſe complaints can be ſuppoſed to ariſe from the want of a due degree of contractibility in the blood veſſels, gentle emetics, occaſionally repeated, have been of great ſervice. However, in far the greater number of caſes of this kind which occur in practice, the diſcharge ſeems to be ſymptomatic, and dependant on the general feveriſh ſtate of the patient, or that of the *uterus* in particular. For, if aſtringent or ſtrengthening medicines are given in the firſt inſtance, they are ſo far from removing the complaint, that they increaſe it, and the diſcharge will continue as long as ſuch medicines are adminiſtered. But, if the feveriſh diſpoſition be previouſly abated by bleeding and a proper regimen, ſuch medicines as were before recommended for the ſuppreſſion of the *menſes* may then be given with propriety and advantage. In diſcharges of blood from the *uterus*, proceeding from diſeaſes of the part, the

the treatment muſt depend upon the nature of the diſeaſe, of which we cannot form any juſt opinion without an examination *per vaginam*.

SECTION VII.

THE pain with which ſome women menſtruate at each period, is ſufficient, from its violence and duration, to render a great part of their lives miſerable*. Healthy, robuſt women, or thoſe in whom the proceſs is ſpeedily concluded, ſuffer very little at that time; the pain is therefore to be attributed to an increaſed degree of irritability in the habit, or to the difficulty with which thoſe veſſels, deſigned for the menſtruous diſcharge, become permeable. It is in general moderated, and ſometimes altogether removed, by the uſe of ſuch means as leſſen uterine irritation, or facilitate the diſcharge. Bleeding in ſmall quan-

* Dyſmenorrhæa. *Vogel* clxx. Profluvium ſanguinis uterini menſtruum dolorificum.

tities,

tities, gently purgative medicines, and opiates, repeated according to the urgency of the caſe, may be occaſionally directed with advantage. Soaking the feet in warm water, or receiving the ſteam of it upon the parts principally affected, will often do much ſervice; but no medicine of this kind gives equal relief with the warm bath, which may be uſed every evening, when the ſymptoms proceeding menſtruation come on, and continued throughout the period. Many medical writers have adviſed, and it is yet a popular cuſtom, to give medicines of that kind which have been called deobſtruent, with the view of promoting the diſcharge by quickening the action of the parts concerned; and in ſome conſtitutions theſe may be proper: but, as all ſuch medicines diſturb and increaſe the heat of the body, they are generally found, by experience, rather to increaſe than to abate the pain.

SECTION VIII.

At the approach of old age the *menſes* diſappear, the conſtitutions of women neither requiring nor allowing a continuance of the diſcharge. It was before obſerved, that this event uſually happens about the forty-eighth year of their age, though ſome inſtances have occurred of their ceſſation ſo early as the thirty-fifth, and of their duration to the ſixtieth year of the woman's age.

The *menſes* ſeldom diſappear ſuddenly; but, before their departure, they become irregular in their periods or in the quantity diſcharged. Theſe irregularities are uſually accompanied with diſturbances in the conſtitution, particularly of the *viſcera*, and thoſe complaints which are called hyſteric.

All women are alarmed at the time of the final ceſſation of the *menſes*; and are perſuaded that the ill conſequences which ſometimes enſue are to be prevented by proper care and management. But it muſt be obſerved, that

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ſcarce one of a great number of women ſuffers more than temporary inconvenience on that account; and it is not reaſonable to think that any diſeaſe ſhould be a neceſſary conſequence of the ceſſation of a diſcharge, which is as perfectly natural as its appearance or continuance. But if there be a diſpoſition to diſeaſe in the conſtitution, eſpecially in the *uterus*, a more rapid progreſs is made when the *menſes* ceaſe; not becauſe theſe give exiſtence to, or increaſe the diſeaſe by their qualities, but becauſe the conſtitution, or the part diſpoſed to diſeaſe, is deprived of a local diſcharge, by which it was relieved.

On the preſumption that the *menſes* retained became, by their malignant quality, the cauſe of diſeaſes, many medical writers have adviſed aloetic, and other ſtimulating medicines, which were ſuppoſed to poſſeſs the power of continuing the diſcharge a longer time than the natural. As the principle is not juſt, the practice is alſo in general very injurious; for I hardly recollect an inſtance in which ſuch medicines did not do miſchief, by increaſing all thoſe complaints which were imputed to, becauſe they occurred at the time of, the final ceſſation of the *menſes*.

But

But the preſent mode of practice is far more reaſonable and ſucceſsful, it being now uſual to bleed occaſionally, which women advanced beyond this period generally bear very well, and to give lenient purgatives, avoiding all kinds of medicine and diet which are heating.

It is, however, a well known fact, that the *uterus* is more liable to diſeaſes at the time of the final ceſſation of the *menſes* than at any other; and that theſe often terminate either in a ſcirrhus or cancer, with conſequences the moſt painful and deplorable. We have, at preſent, no idea of a cancer but that it is an incurable diſeaſe, of which there are probably many varieties; and when it affects the *uterus*, beſides the general ſymptoms which ariſe from uterine irritation, or from other cauſes, there is, together with pain increaſing according to the progreſs of the diſeaſe, a ſerous, ichorous, or bloody diſcharge, frequently of ſuch an acrimonious quality, as to excoriate the external parts in its paſſage, and at length to corrode the bladder and *rectum*; admitting no other relief than what is afforded by *opium*, which has only the power of procuring an imperfect and ſhort inſenſibility to the tortures of the diſeaſe.

For the relief of thoſe who have ſuffered all the complicated evils of a cancer of the *uterus*, humanity and intereſt have inſtigated many practitioners to pay the moſt ſerious attention to this diſeaſe, with the view of diſcovering its cauſe, the means of preventing it, or ſome adequate remedy when it did exiſt; even the pretenſions of empirics have been examined with candour and tried with perſeverance. Of courſe, we have been led to the uſe of a variety of medicines, of which great expectations of benefit have been entertained; as preparations of quickſilver, of iron, of lead, of antimony, and even of arſenic; all the ſaline preparations; ſarſaparilla, bark, clivers, or gooſe-tongue; the juice of the water-parſnep, and of a thouſand other herbs; but, above all, the hemlock in every form, ſeparate or combined with each other. Baths, fomentations, and injections of every kind, have been applied with many different contrivances. Some of theſe have evidently accelerated the progreſs of the diſeaſe, and though others have afforded temporary relief, few ingenious men will heſitate to acknowledge, that the good to be expected from any mode of treatment, or medicine hitherto diſcovered, muſt be

be obtained by the relief of the ſymptoms, rather than the diminution or removal of the diſeaſe; and that, in its advanced ſtage, we may be happy if ſo much be in our power.

It is remarkable, that the cure of cancers affecting other parts of the body, where applications could be made with the greateſt facility and advantage, has not been attempted, when thoſe of the *uterus* have been undertaken with great confidence. This may be among the inſtances in which the credulity of patients renders them liable to the impoſitions of empirics, who often pretend to cure a diſeaſe which never exiſted, or extol as a cure its mitigation. If it be however allowed, that this diſeaſe is incurable, and that regular practice deſpairs of giving aſſiſtance, when the diſeaſe is arrived at a certain ſtate, the trials of empiriciſm, under ſome reſtrictions, may not only be permitted but encouraged, with the expectation of ſome caſual good; and if, by the expenditure of money, hope, though of ſhort duration, can be procured, the purchaſe is cheap at any rate. It is upon this principle that honeſt men are ſometimes obliged to equivocate, or to promiſe more than they are conſcious they are able to per-

form. But, as by the favour of Providence, and the labours of men, remedies have been diſcovered for many diſeaſes which were once thought incurable, we may truſt that one will at length be found for this moſt deplorable diſeaſe *.

But this eagerneſs to diſcover ſome ſpecific remedy for a cancer, has, in one view, been productive of miſchief. Though the eſſential nature of the cancerous *virus* is unknown, one of its firſt effects is inflammation, with its concomitant ſymptoms. Or, perhaps more

* Many years ago, I drew up propoſals for the eſtabliſhment of a houſe for the reception of cancerous caſes only; to be under the direction of a very able phyſician, ſurgeon, and apothecary, whoſe abilities ſhould be wholly exerted for the inveſtigation of the nature of this diſeaſe, and for the examination of the effect of the medicines which it might be prudent to try. If ſuch a houſe ſhould ever be eſtabliſhed, the medical attendants ought to receive public ſalaries, becauſe the profeſſed object would be to gain knowledge; whereas, in other hoſpitals, the principal object is to relieve the diſtreſſed, the acquiſition of knowledge being a ſecondary conſideration.

Lately ſome benevolent gentleman, who added to the merit of the donation by the concealment of his name, has, at the expence of more than three thouſand pounds, formed an eſtabliſhment for this purpoſe in the *Middleſex Hoſpital*, from which I hope much good will be derived.

properly

properly ſpeaking according to Mr. *Hunter*, a cancer may be ultimately produced either by a long continuance of one wrong action, or by a ſucceſſion of wrong actions; ſo that if we had the power of ſuppreſſing or quieting the firſt or ſecond action, we ſhould in fact be able to prevent, though we could not cure a cancer, which may be the reſult of the whole. As the diſpoſition to inflame may often be removed by bleeding, proper medicines, a very ſtrict and abſtemious diet, the part may be kept in a quieſcent ſtate, and the progreſs of the diſeaſe ſuſpended or retarded. For this purpoſe alſo, local bleedings, very frequently repeated, by ſcarification or leeches on the lower part of the back, or on the thighs in uterine caſes, are often uſeful; and iſſues have been found, in ſome caſes, to have done much ſervice. But if theſe means of giving relief are neglected, which have indubitably been found to ſooth, to leſſen, to ſoften, and ſometimes entirely to diſſipate, inflamed, enlarged, or indurated tumours in the breaſts, and other parts, and we are wholly engaged in the contemplation of an abſolute and effectual cure, when a cancer is actually eſtabliſhed, it appears that we reject a leſs preſent ad-

vantage which is generally in our power, for the purſuit of a greater, though diſtant good, which we may never obtain, as well as loſe the chance of preventing future miſchief. It muſt alſo be obſerved, that a very great number of caſes have occurred, in which thoſe ſymptoms which commonly attend a cancer of the *uterus*, and which have been called cancerous, have come on with great rapidity and violence, were not really ſuch, as the patients have not only been relieved, but effectually cured, by activity and perſeverance in the antiphlogiſtic treatment above mentioned.

CHAPTER V.

SECTION I.

ON CONCEPTION.

By the term conception is underſtood, the formation of an *embryo*, or of the rudiments of a new being, in conſequence of the mixture of the male and female *ſemen*; or of the operation of one or both of theſe, in or after the act of coition.

It has been much diſputed whether conception be merely an aſſemblage of ſmall particles already prepared, and conſtituent of the kind; or firſt a production or change of, and then a coaptation of particles deſigned for that purpoſe. But the firſt part of the proceſs by which primordial exiſtence is eſtabliſhed, by the minuteneſs and complication of the objects to be deſcribed, and by the retirement of the attending circumſtances, is probably

involved in too much obſcurity to be diſcovered by the human faculties. Even when the firſt changes have been made, the parts remain too ſmall to admit a very accurate examination. But neither the difficulty of the inveſtigation, nor the acknowledged uncertainty of all reaſoning, without the ſupport of facts, have deterred ingenious and ſpeculative men, in every age, from hazarding their opinions on this ſubject. It is true, that little ſatisfaction or advantage is to be gained; but if we do not profit by the knowledge of their opinions, we may be convinced that little has hitherto been ſaid on this ſubject for our information.

The firſt opinion recorded is, I believe, that of *Pythagoras*. He ſuppoſed that from the brain and nerves of the male, a moiſt vapour deſcended in the act of coition, by which ſimilar parts of the *embryo* were formed. Theſe were thought to be the ſeat of the ſoul, and of courſe the parts from which all the ſenſes were derived. All the groſſer parts, he imagined, were compoſed of the blood and humours contained in the *uterus*. He ſaid that the *embryo* was formed in forty days, but that ſeven, nine, or ten months were required for the perfection of the *fœtus*, according

according to the laws of *harmony*. He alſo ſuppoſed that the ſame laws which guided the formation of the *fœtus*, influenced the conduct of the man.

It was a cuſtom with the *Scythians* to cut the veins behind the ears, when they intended to procure impotence or ſterility; and it is remarkable that this cuſtom remains, and an opinion like that of *Pythagoras*, is entertained by the inhabitants of ſome of the iſlands lately diſcovered in the South Seas. Changing the term *harmony* for magic, occult quality, and the like expreſſions, by which an imperfect idea is conveyed, or a conceſſion that we have proceeded to the extent of our knowledge is actually made, many ſucceeding writers have given us their conjectures.

Empedocles preſumed, that ſome parts of an *embryo* were contained in the *ſemen* of the male, and others in that of the female, and that by their mixture an *embryo* was formed. He likewiſe thought that the deſire of procreation originated in the natural tendency of the ſeparated parts to be united.

That conception took place in the cavity of the *uterus*, by the mixture of due proportions of the male and female *ſemen*, in which were

were equally contained the organic principles of the *embryo*, was the opinion of *Hippocrates*.

Ariſtotle denied the exiſtence of *ſemen* in the female. He imagined that the material parts of the *embryo* were formed by the menſtruous blood, and that the *ſemen* of the male furniſhed it, when formed, with the principle of life, by the operation of which it was brought to perfection. It is remarkable that a philoſopher, with every advantage which a ſuperior capacity, and the moſt extenſive opportunities of acquiring knowledge could give, ſhould attempt to explain, what is common to all animals, by a circumſtance peculiar to one claſs.

Galen thought that the *embryo* was formed by the ſubſtance of the male *ſemen*, and that the humour ſupplied by the female ſerved the mere purpoſe of nouriſhing it.

Harvey employed a conſiderable part of his life in obſerving the ſtructure of the *ovum*, and the progreſs of conception in a variety of animals. When he had completed his diſcovery of the circulation of the blood, this ſeems to have been his favourite ſtudy, which he proſecuted with the true ſpirit of inquiry,

and

and in which he made many obſervations worthy of that ſagacity and induſtry which were never exceeded. With his diſpoſition, abilities, and advantages, it was reaſonable to expect that he would have ſaid ſomething ſatisfactory upon this ſubject. But, after much previous apology, for an opinion which admitted no other proof, than an alluſion to a circumſtance of all others the moſt incomprehenſible, he tells us, that as iron, by friction with a magnet, becomes poſſeſſed of magnetic properties, ſo the *uterus*, by the act of coition, acquires a plaſtic power of conceiving an *embryo*, in a manner ſimilar to that by which the brain is capable of apprehending and thinking *.

The opinion of *Hamme*, of the credit of which he appears to have been unfairly deprived by *Leewenhoeck*, was afterwards received with great applauſe, became the doctrine of the ſchools, and gave univerſal ſatisfaction, becauſe it was ſupported by a fact,

* Videtur ſane fæmina, poſt tactum in coitu ſpermaticum eodem modo affici, nulloque ſenſibili corporeo agente prolifica fieri, quo ferrum a magnete tactum, hujus ſtatim vi dotatur aliaque ferramenta adſe allicit.—*Harv.* Exercit. de Concept.

which,

which, by the help of his microſcopes, he preſumed he was able to demonſtrate. He aſſerted that, in the *ſemen* of all male animals, there was an infinite number of *animalculæ*, in each of which were contained the perfect rudiments of a future animal; and that theſe required no other aſſiſtance from the female, but a proper bed for their habitation, and nutriment for their expanſion.

From him *Needham* and many others diſſented; and, after ſeveral other objections of leſs importance, they adduced the obſervation of a mixed generation, as in the caſe of an hybrid or mule; which, being procreated by two animals of different ſpecies, partakes in an equal degree of the nature and likeneſs of the male and female parent. This ſeems to be a deciſive and unanſwerable refutation of the doctrine of *animalculæ*; and I believe the ſentiments entertained at the preſent time are, that the moving bodies which *Leewenhoeck* ſaw in the *ſemen*, were not *animalculæ*, or organized parts, but parts fitted for organization.

From the manner in which the *vagina* and *uterus* are connected, it has been thought that the male *ſemen* was not deſigned to be introduced into the *uterus* of the female; but being

being abſorbed from the *vagina*, that it paſſed in the common courſe of the circulating blood, and was conducted to one of the *ovaria*, where it performed its proper office by the impregnation of one or more *ova*. But the examination of the *uteri* of animals in the act of coition, and of many women who have died immediately in, or ſoon after it, fully proves that the *ſemen* of the male is firſt received into the cavity of the *uterus* *.

It has been generally ſuppoſed, that conception was produced by the ſubſtance of the male *ſemen*. But ſome have contended, that the *ovum*, when incloſed in the *ovarium*, was impregnated by an *aura*, exhaled from the *ſemen*, which contained the principle and powers of life, of which *aura* the *ſemen* was merely the vehicle.

Many objections being made to theſe and every other opinion which has been advanced upon this ſubject, the chemiſts undertook to ſolve all doubts, and to explain all difficulties, by the application of their principles. They preſumed that the male *ſemen* was of an acid,

* Vidimus cavum uteri, albo, naturali atque bono ſemine maſculino repletum, utramque etiam tubam Fallopianam eodem ſemine plenam.—*Ruyſch.* Adv. Anatom. Dec. 1.

and

and the female of an alkaline quality, from the mixture of which an efferveſcence aroſe. From ſome particles which ſubſided on the concluſion of the efferveſcence, they fancied that the *embryo* was formed, the fluid parts becoming the waters of the *ovum*. Others imagined that the male *ſemen* had the properties of milk, and the female thoſe of rennet, by which it was coagulated, the *fœtus* being formed from the curd, and the waters of the *ovum* by thoſe parts which reſembled whey *. Various other notions have been propoſed with a view of explaining this very abſtruſe operation; but they leave us in a ſtate of uncertainty. Some of them may amuſe, becauſe they are ludicrous, and in the deſcription of the parts concerned, the uſes they are intended to anſwer, and the manner in which they perform their reſpective offices, the imagination hath been indulged with a freedom not very conſiſtent with the dignity of Philoſophy.

* Sicut lac mulſiſti me, et ſicut caſeum coagulaſti me. —*Job.*

Revera in illo tempore, cum embryones adeo exigui ſunt, comperio rudimenta noſtra, maximam haberi analogiam cum coagulo lactis—*Ruyſch.* Theſ. vi.

If

If we were able to diſcover the eſſential properties of the male *ſemen*, the preciſe ſhare which the male and female contribute towards the formation of the *embryo*, and the part where the effect is produced, the advantages which would thence accrue in practice do not appear; though it is difficult or impoſſible to ſay, to what the diſcovery of any truth may lead before it is diſcovered. But it is happy for us that thoſe things which are beyond the comprehenſion, or which elude the obſervation of men of plain underſtandings, are of the leaſt importance in practice; Providence having ordained, that the honeſt and induſtrious application of common capacities, ſhould be equal to the exigencies of life, and the duties we owe to ſociety.

SECTION II.

A GENERAL view of the manner in which the ſucceſſion of all natural ſubſtances is preſerved, might be a very uſeful introduction to

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an inquiry into the generation of animals. For, though there appears to be little reſemblance between this and the principle by which inanimate bodies are continued, it is not very unreaſonable to ſuppoſe, that there may be ſome common eſſential quality diffuſed through all nature, limited in its operation by the kind of matter on which it is deſtined to operate *.

Minerals conſtitute the loweſt order of all natural bodies, and theſe have been thought to be increaſed by the aſſimilation or appoſition of ſuch homogeneous particles as were contained in the *matrix* or bed in which they lay. But many other cauſes have been aſſigned for the converſion of bodies into peculiar modifications; as the heat of the ſun, of the central fire, cold, and alternate heat and cold, by which the ultimate determination of every mineral ſubſtance into a certain form was ſuppoſed to be effected. Some have entertained more dignified opinions of the increaſe of minerals, believing that there was in theſe

* Naturalia dividuntur in regna Naturæ tria, Lapideum, Vegetabile, Animale.

Lapides creſcunt, Vegetabilia creſcunt et vivunt, Animalia creſcunt, vivunt et ſentiunt.—*Linnæus.*

a principle

a principle far ſuperior; and that a grain of ſand became a ſtone, by the operation of a cauſe, equal to that by which a vegetable, from a ſeed, acquired the perfection of a plant *. Others are perſuaded that, in mineral ſubſtances of every kind, there are two properties, the one ſpecific, the other general. To the firſt, to which the power of increaſe was attributed, the name of elective attraction is given; and to the latter, by which its form was preſerved, that of attraction of coheſion †. Theſe, which are moſt powerful in the largeſt maſſes of matter, imply ſome property ſuperadded to matter, which, though ſlow and obſcure in its operation, is equivalent for the purpoſes of its increaſe and preſervation, in all its various forms, with that of life, by which vegetables and animals are propagated and preſerved. In this view the term *ſpontaneous generation*, though not allowed in vegetables or animals, may properly be applied to minerals. It is alſo worthy of obſervation, that by the time required for the forma-

* *Tournefort.*

† That force by which the parts of bodies cohere is ſtronger than its gravity. That force, whatever be its cauſe, we ſhall call the attraction of coheſion.—*Deſaguliers.*

tion of matter, under every individual modification, its continuance under such modification is regulated. For, if there had been no relation between the power of increase and the tendency to decay, the whole world, in a course of years, must have been composed of matter under one peculiar form.

Through all nature, there is not found a single body which consists of materials lying in confusion; however small and apparently insignificant, every particle exhibits proofs of the majesty and wisdom of God; and it may be presumed that the minutest elementary parts of every substance are originally composed and wrought up in the most regular order, into what is called form. Yet in mineral substances it is a form so immerged in matter, that it is ever restrained from the acquisition of the excellence of a living body, unless there be a previous destruction of its present form *. But the more refined the matter,

* That state in which all bodies are, during the time they are losing their present form, or undergoing any change, was, by the ancients, called fermentation. In this sense the term was applied to fevers; but many modern physicians have used the same term in a more confined sense, and the application of it will not then bear examination.

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the more perfect is the form; and the more perfect the form, the more exquiſite are the properties. Hence the common obſervation ſeems to have been made, of the encroachment, as it may be called, of one order of natural bodies upon another; of the near acceſſion of the firſt minerals to the loweſt vegetables, and of the firſt vegetables to the loweſt animals, in ſuch a manner that they can ſcarcely be diſtinguiſhed.

Of the mineral, vegetable, and animal kingdoms, there is to common ſenſe a clear and preciſe diſtinction, though language may be inſufficient to give a definition of vegetables, which will not apply to animals. It is not ſatisfactory to ſay that vegetables have no power of loco-motion, that they have leſs variety of parts, that their conſtituent parts are more ſimple, that they do not breathe, that they have no appetites, and do not digeſt food; that they have no ſenſation, and are only injured by ſuch things as deſtroy their organization. For it may be replied, that vegetables do perform ſome operation equivalent to reſpiration, as they cannot live without air; that they are affected by light; that they require, diſtinguiſh, abſorb, and digeſt food, or

nouriſhment; that ſome of them move, and others have a certain degree and kind of ſenſation.

Whatever may be the eſſential difference between vegetables and animals, it is probable, that they are both ſubject to the ſame influences; as in thoſe ſeaſons which are moſt favourable to vegetation, animals are generated in the greateſt number; and there is evidently much reſemblance in the manner of their propagation. The ſexual diſtinction of plants is now fully proved; or it is allowed that there is a diſtinction between two plants of the ſame kind, like to that between a male and female animal; and that thoſe vegetables in which ſuch diſtinction is not obſerved, have both the male and female parts, and are therefore with propriety called hermaphrodites. For, though a female plant may produce ſeeds, to our view, in a perfect ſtate, theſe, without the intervention of the fecundating principle from the male plant, remain ſteril, as hath been fully ſhewn in the tribe of melons, the palm-tree, hemp, and many other vegetables. But a more ſatisfactory proof is afforded by hybrids or mule-plants, which are produced when a female vegetable of one ſpecies,

cies, hath had its ſeeds impregnated by the *farina* of one of another ſpecies growing near it.

In the form and ſtructure of the ſeeds of vegetables of every denomination there is ſome peculiarity; but they all contain the rudiments of a future plant, with ſomething added to their form, of equal efficacy for the perfection of the plant, and therefore as juſtly called life, as that principle by which animals are brought to their perfection; for we know nothing of life but by its effects, the *thing* not admitting of any definition. Any ſeed, berry, or kernel, would be an adequate example of this ſubject; but we ſhall ſelect nuts, becauſe they are equally curious with the reſt, and more familiar.

A nut is contained in a foliaceous cup or huſk, by which it is connected to the tree. The broad end of the nut is cloſely attached to the cup by ſmall veſſels, which, in the early ſtate of the nut, are very numerous; but, as it advanceth towards maturity, theſe gradually wither away, till the few remaining ones becoming too feeble to ſupport the nut, it drops to the ground. This may in one ſenſe be called the birth of the nut, though it may

with more propriety be likened to the ſeparation of the impregnated *ovum* from the *ovarium* in viviparous animals, or to the expulſion of the egg in oviparous ones. When the nut is fallen to the ground, if the bed which receives it and other circumſtances are favourable to germination, a new proceſs begins, the ſhell ſoftening by the moiſture abſorbed by that end of the nut which before adhered to the cup, and which is more porous than the other parts. The whole internal ſurface of the ſhell is lined with a flocculent ſubſtance for the prevention of injury to the kernel from the hardneſs of the ſhell, and for the reſerve and preparation of the moiſture already abſorbed. The kernel has alſo two membranes, the inner of which is fine and pellucid, but the outer is of a coarſer texture, reſembling that ſubſtance which lines the ſhell. On the internal ſurface of the broad end of the ſhell there is a congeries of veſſels, or a ligament, which paſſes, between the kernel and ſhell, to the *apex* of the kernel to which it is attached, and probably ſerves the purpoſe of an umbilical cord. When the ſhell has continued in this ſituation for a certain time, it decays or burſts, and gives room for the expanſion of the

the kernel. During this interval, the proceſs of germination is going on in the kernel, which is not deprived of its coverings, ſo long as they are neceſſary for its protection. The *corculum*, or bud, begins to ſprout; the outer membranes decay, and, together with a great part of the kernel, ſerve as the firſt ſupply of nouriſhment. Then the radicle and other parts of the little plant are unfolded; and when they have acquired a certain degree of ſtrength, the kernel is diveſted of all its ſubſervient parts, the root ſtrikes into the ground, and the plant is perfected by the vigour of its own principle.

Between the production of vegetables from ſlips and the multiplication of *polypi*, from the ſection of their parts, there is at leaſt an equal ſimilitude with the mode of propagation of which we have already ſpoken. It is alſo deſerving of notice, that, as the operation of the principle of life is often ſuſpended for a very long time in the ſeeds of vegetables, without deſtruction in very unfavourable circumſtances, the ſame hath been obſerved in inferior animals, particularly in ſnails*; though, in this reſpect, vegetables appear to have the ad-

* *Annual Regiſter*, Vol. xvii.

vantage; and from the proofs which have been given by philoſophical men, of this ſuſpenſion of the operation of the principle of life, divines have, by no forced conſtruction, illuſtrated the doctrine of the reſurrection of the human body after its decay *.

SECTION III.

Of the propagation of all the inferior orders of animals, diverſified as they are, it is impoſſible to take notice. The greater part of theſe are oviparous, and it has even been aſſerted, that every living body was produced from an egg; but this is a very unjuſtifiable uſe of the term †.

* See *Philoſophical Tranſactions* for the year 1784, in which there is a very curious paper on this ſubject by Mr. *John Hunter*.

† Diximus antehac ovum eſſe tanquam fructum animalium. *Harv.* Exercitat. de Partu.

† In omni genere animantium quæ ex coitione naſcuntur, invenies ovum aliquorum eſſe principium, inſtar elementi. Ovum vero digeſtio eſt ſeminis.—*Macrob. Saturnal*, Lib. vii. cap. xiv.

It

It is probable that the eggs, properly ſo called, of all animals, minute as many of them are, are compoſed of ſimilar parts with thoſe of the larger oviparous animals. We may therefore be permitted to take our example from the eggs of birds, in which all the circumſtances relating to the formation of the animal, have been well deſcribed by many able men, but with peculiar accuracy by the illuſtrious *Harvey*.

The eggs of birds are compoſed of two principal parts, which, from their colour, are called the yelk and the white. The yelks only are found in the *ovarium*, to which they are attached, and where, it is preſumed, they are impregnated. They are of different degrees of magnitude, and that which is the moſt perfect drops into the *infundibulum*, by which it is carried into the *uterus*, collecting in its paſſage the white. In the *uterus* it is clothed with its membranes and ſhell, after which it is expelled in a firm ſtate *.

* I cannot forbear quoting the following beautiful paſſage from *Harvey*.—"Columba, præſertim ea, quæ ad nos ex Africa advehitur, gaudium a coitu mirum in modum exprimit: ſaltat, caudam diſtendit, eaque imam verrit humum, roſtro ſe pectit et ornat; quaſi fœcunditatis, donum ſummam in gloriam duceret."—Exercitat. xxxiv.

The

The texture of the ſhell is admirably calculated for preſerving the contained parts, and for conducting and retaining that heat which is conveyed to them by incubation. Immediately within the ſhell is the common membrane, which lines the whole cavity of the egg, except at the broad end, where there is a ſmall ſpace filled with air. Within this membrane the white, which is ſaid to be of two kinds, is immediately contained; and near the centre, in an exquiſitely fine membrane, the yelk. The white is of the ſame form with the ſhell, but the yelk is ſpherical. At each extremity of the yelk, next to the ends of the egg, is the *chalaza*, a white firm body, conſiſting of three globules like ſmall hail-ſtones. In the *chalaza*, the ſeveral membranes are connected, by which means the various parts, in every poſition of the egg, are retained in their proper place. Upon the yelk, near the middle, there is a ſmall, flat, circular body or veſicle, called the *cicatricula*, in which the rudiments of the chick are contained. In conſequence of incubation, or of continued heat of any kind to a certain degree, the reſpective changes are produced with great exactneſs; but, previous to any organization

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of parts, the firſt obſervable alteration of importance is the formation of blood, which *Harvey* has therefore deſcribed as the *primum vivens, ultimum moriens*. The heart, which is ſoon perceptible, is in a ſhort time diſcovered to be in motion, then the vaſcular ſyſtem and the other conſtituent parts of the animal in regular order. The white of the egg becoming thinner, ſupplies the growing chick with nouriſhment, as does likewiſe the yelk, till it is of too large a ſize to be contained in the ſhell, which burſting, the chick is ſet at liberty, and carries in the *ductus inteſtinalis* a part of the yelk for its future ſuſtenance, till its powers are ſufficiently vigorous to enable it to take and digeſt extraneous food.

SECTION IV.

THE regular diſpoſition and connexion of the various parts of matter of which the world is compoſed, and of the various living bodies by which it is inhabited, are not more

ſurpriſing

ſurpriſing than the circumſtances by which they are diſtinguiſhed. For, though there is an evident ſeries of relations by which their connexion is preſerved, to each different being, there is ſome outward mark or inward ſtructure, by which it is ſeparated from thoſe which precede and follow it. Thus in every order of animals there is obſerved a difference in the ſtructure of the parts concerned in parturition, and in the *ovum* or conception which they ſeverally produce, by which each claſs might be arranged as juſtly, as by the ſtructure of any other internal or external part. The human *uterus* alone is pyriform, and the *placenta*, which is flat and circular, adheres to it by a broad ſurface. But all animals have the *uterus* divided at the *fundus* into two branches, or horns; and the gradation from the human *uterus*, to that of an animal, debaſed to the loweſt extremity of the viviparous claſs, makes a very curious part of natural hiſtory. In the *pecora* the horns are convoluted and terminated in a point, and the connecting ſubſtance between the *fœtus* and parent is divided into ſeveral portions called *cotyledons*, which adhere to as many temporary productions of the *uterus*, reſembling glands.

glands. In the *feræ*, there is a variation in the horns of the *uterus*, and the connecting ſubſtance between this and the *fœtus*, though in one maſs, ſurrounds the *uterus* like an internal belt. In the *belluæ*, the horns of the *uterus* are reflected and obtuſe, and the *fœtus* has neither *placenta* or *cotyledons*, but receives its nouriſhment by the very capacious veſſels of the membranes. Theſe and many other varieties in every claſs, to which it is not poſſible in this inquiry to pay attention, anſwer ſome very important purpoſe, in giving to each animal its diſtinguiſhing properties, and in the offices performed, there is ſome peculiarity in manner, dependent upon ſtructure; ſo that from the circumſtances attending the parturition of animals of one kind, no inferences could be made which would not be liable to many exceptions, if we compared them with thoſe of any other.

SECTION V.

Of all viviparous animals man is the chief. The manner in which his race is propagated is the object to which we are at present to confine our attention. But that succession of opportunities necessary for such an examination not being attainable in the human species, recourse hath been had to inferior animals, on the presumption that there is not only a common principle by which viviparous animals are propagated, but also that common effects are produced by the operation of that principle. Great attention hath been paid to the cultivation of this subject, but in the detail of the circumstances which are said to occur in the conception or production of the human *fœtus*, several are admitted which it would be extremely difficult to demonstrate or prove.

Previous to or during the act of coition it is presumed, that one or more of the vesicles, or *ova*, contained in the *ovaria*, is brought to a state fit for impregnation, and that the male *semen* being transmitted into the cavity of the

uterus,

uterus, is thence conducted by one of the *fallopian* tubes to one of the *ovaria*, where it perfects the rudiments of the *fœtus*, or impreſſes them already perfected with the principle of life. The prolific *ovum*, having undergone its firſt changes in the *ovarium*, is then looſened from its connexion, graſped by the *fimbriæ*, and conveyed by one of the *fallopian* tubes to the cavity of the *uterus*.

When the *ovum* is impregnated, and while it remains in the *ovarium*, the *uterus* paſſes through ſome peculiar changes, by which it is rendered fit for the reception of the *ovum*. The blood veſſels of the *uterus* then appear to be enlarged, as in a ſlight degree of inflammation; the internal ſurface becomes ſofter and more ſpongy in its texture; and a white *mucus*, which has been likened, from the delicacy of its arrangement, to the web of a ſpider, is ſecreted; which, gradually aſſuming a more ſolid form and becoming vaſcular, adheres or is cloſely united to the *uterus*, to the whole cavity of which it forms a lining, except at the orifices which lead to the *fallopian* tubes and the *os uteri**.

* See *Harv.* Exercitat. lxix.

To

To this membrane various names have been given, and various opinions entertained of its formation *. A juſtly celebrated anatomiſt of the preſent time, in whoſe accuracy and judgment I ſhould willingly confide, has conſidered it as the inner *lamina* of the *uterus*, caſt off, like the *exuviæ* of ſome animals, after every conception, and has from this circumſtance called it the *decidua*; and from the manner of its paſſing over the *ovum*, the *decidua reflexa* †. It is, however, unneceſſary to debate upon the manner in which this membrane is formed, all writers upon this ſubject agreeing, that its formation is cotemporary with conception; and that it precedes the time when the impregnated *ovum* paſſes from the *ovarium* into the *uterus*. It may, therefore, be deemed an indiſpenſibly requiſite preparation of the *uterus*, for the reception of the *ovum*, and the ſubſtance by which this is afterwards connected to the *uterus*; ſo that if it was to receive a name from

* Villoſam, flocculentam, pſeudo-chorion, *ſpongy* chorion.

† Anatomia Uteri Human Gravidi Tabulis Illuſtrati.—*Gul. Hunter.*

its

its uſe, it would not be improper to call it the connecting membrane of the *ovum* *.

SECTION VI.

THE contents of the human gravid *uterus* are compriſed under the general term *ovum*, or conception, of which the component parts are, the *fœtus*, the *funis umbilicalis*, the *placenta*, the membranes, and the waters. Of theſe it is reaſonable to think, that the *fœtus* is the only part immediately formed in conſequence of the act of coition, and that the reſt are previous or ſubſequent productions of the *ovarium* or *uterus*.

It has been thought that ſome of the parts of the *fœtus* were formed before the reſt, and

* Of the formation of this membrane *Harvey* has given the following very curious account:—Per mediam utriuſque cornu atque etiam uteri cavitatem mucoſa quædam filamenta, tanquam aranearum telæ, ab ultimo ſive ſuperiore cornuum angulo ducuntur; quæ ſimul juncta membranoſam ac mucilaginoſam tunicam, ſive manticam vacuam referunt. *Harv.* Exercitatio ſexageſima nona.

much labour hath been beſtowed in aſcertaining the order of their formation *. But, as the ſkin of the ſmalleſt *embryo* which can be examined is perfect, it may be preſumed that what has been called addition or coaptation of parts, is, in fact, nothing more than the expanſion or unfolding of parts already formed. Of this we have a curious example in the deſcent of the teſticles into the *ſcrotum*, which happens only a few weeks before the birth of the child, though their prior exiſtence in the *abdomen* is not to be doubted. This opinion is likewiſe illuſtrated by the ſeeds of plants, which muſt contain all the primordial parts of the plants, when they are firſt depoſited in the ground, from which they can draw only the means of nouriſhment and increaſe.

Much induſtry hath likewiſe been uſed to determine the weight, length, and dimenſions of the *fœtus*, at different periods of uterogeſtation. The utility of this inquiry, if the truth could be diſcovered, does not appear. But as children born of different parents, or thoſe born of the ſame parents, at the ſame or

* Embryones dicendi ſunt, quando membra non ſunt abſoluta.—*Ruyſch.*

different

different births, vary at all periods of pregnancy, it is reaſonable to believe, that there is an original difference in their ſize and in other reſpects. Many of the varieties may alſo depend upon the ſtate of the health either of the parent or child before its birth, ſo that it ſeems impoſſible to bring this matter to a fair concluſion.

During the continuance of the *fœtus* in the *uterus*, its internal ſtructure is in many reſpects different from that of a child which has breathed; and the external figure of a child is very unlike that of an adult, in the proportions which the various parts bear to each other. Of thoſe peculiarities, which give a diſpoſition to particular diſeaſes, we ſhall ſpeak in another place.

From the time when the *fœtus* is completely formed, the head is large, if compared with the body and extremities; and the younger the *fœtus* is, the greater is the diſproportion. The ſuperior weight of the head is ſuppoſed to be the cauſe of its general preſentation at the time of birth: but there muſt be ſome other reaſon; for the ſame preſentation is equally common in quadrupeds, in

whom the extraordinary weight of the head, if it exiſted, could not produce this effect.

The principal circumſtances in which the *fœtus* and adult vary, are in the vaſcular ſyſtem. In the heart of the former a communication is preſerved between the right and left auricle, by an opening called the *foramen ovale*, which cloſes ſoon after birth; but a valve prevents the return of the blood from the left to the right auricle *. There is alſo a communicating artery, between the *aorta* and the pulmonary artery, which is called the *canalis arterioſus*, and may be eſteemed a branch of the pulmonary artery. This branch, which diverts immediately to the *aorta*, a large portion of that blood which circulates in the lungs, when the child has breathed, cloſes likewiſe ſoon after birth. In amphibious animals, the *foramen ovale* and *canalis arterioſus* are ſaid to remain open during life.

The liver in the *fœtus* is very large, nearly filling up both the *hypochondria*, and it has veſſels peculiar to that ſtate: firſt, the *vena umbilicalis*, which ariſes from the *placenta*; and,

* See *Medical Tranſactions*, Vol. III. in which the imperfections in the conſtruction of the heart, with their conſequences, are very accurately deſcribed.

running

running through the *funis*, enters the *abdomen* of the child, and paſſes to the liver, which it penetrates on the inferior edge, terminating in the *ſinus* of the *vena portarum*. This cloſes ſoon after birth, and, with the aſſiſtance of the *peritonæum*, becomes a ligament called the falciform. Secondly, the *canalis venoſus*, which, proceeding from the *ſinus* of the *vena portarum*, paſſes acroſs the liver to the *vena cava*. The *canalis venoſus* is ſmaller than the *vena umbilicalis*, and only carries a portion of the blood brought by the latter to the liver.

The internal iliac arteries are very large in the *fœtus* in proportion to the external. From thoſe, two branches ariſe, which, running on each ſide of the bladder and the ſides of the *abdomen*, paſs out of the navel of the *fœtus*, and form the two arteries of the *funis*, which, cloſing ſoon after birth, become impervious, as far as to the bladder.

Theſe peculiarities in the vaſcular ſyſtem of the *fœtus* are provided, to allow of that mode of circulation of the blood, which is calculated for the life which it poſſeſſeth, during its reſidence in the *uterus*. When the blood is brought by the *vena cava* into the right auricle of the heart, part of it paſſes by the

foramen ovale into the left, and of courſe a ſmaller portion into the right ventricle. When the blood, thus diminiſhed, is propelled by the action of the heart from the right ventricle into the pulmonary artery, a farther portion of it is conducted by the *canalis arterioſus* directly to the *aorta*. It has been conjectured, that about the fourth part of the blood which circulates through the lungs of a child which breathes, paſſed through them while it remained *in utero*.

The two branches of the internal iliacs which afford the arteries of the *funis*, conduct a great portion of that blood which flows through the *aorta*, by the *funis* to the *placenta*; but, when the child is born, that blood which circulated through them, paſſes by the external iliacs to the inferior extremities, which therefore increaſe more ſpeedily after birth than any other part.

The blood brought by the vein of the *funis* from the *placenta* is carried to the *ſinus* of the *vena portarum*, from which, after paſſing through the liver, it proceeds to the *vena cava*; except that part which is conveyed by the *ductus venoſus* directly to the *cava*.

The *thorax* is flatter and narrower in the

fœtus than in a child which has breathed, becauſe it has not been expanded by the inflation of the lungs, which are then of a more compact and firm texture. This ſtate of the lungs, which renders them heavier than water, is eſteemed a proof that the child has not breathed; but when the lungs are found to be lighter than water, which is diſcovered by their floating on the ſurface when put into that fluid, it is ſuppoſed to be an equally ſtrong proof that the child had breathed. Theſe circumſtances of the lungs were formerly produced in evidence in courts of judicature, and inferences of the utmoſt importance to the acquittal or condemnation of a preſumed innocent or guilty perſon have been made from them. But it is well known that the lungs of a child which has lived many months, or even of an adult, may be rendered heavier than water by diſeaſe; and the lungs of a child which has never breathed will become lighter than water by putrefaction; or if they have been inflated artificially, with the view of recovering a child born apparently dead. It is alſo to be obſerved, that ſome children juſt born will breathe two or three times, and then die, though every care be taken, and all

proper means uſed for their recovery; yet the lungs will become lighter than water by this reſpiration, though of ſuch ſhort continuance. The appearance and ſtate of the lungs may be altered by ſo many circumſtances, that a judicious or an honeſt man would heſitate to put confidence in any opinion, which they have been ſuppoſed to prove; and accordingly juries are now, and have long been, directed to pay little regard to this kind of evidence. But when the murder of a helpleſs infant by its mother can be clearly and poſitively proved, it deſerves to be ſeriouſly conſidered on what principle extraordinary lenity ought to be ſhewn to one, who, in the firſt inſtance, breaking through the ſtrongeſt ties and reſtraints of human ſociety, afterward commits an irretrievable injury by the deſtruction of an innocent and helpleſs infant.

SECTION VII.

THE *funis umbilicalis* is that cord which, paſſing from the *abdomen* of the child to the *placenta*,

placenta, maintains the communication between the *fœtus* and *placenta*. In quadrupeds the *funis* conſiſts of two arteries and two veins, but in the human ſpecies it is compoſed of two arteries and one vein, the ſpace between which is filled up with a gelatinous *mucus* contained in cells, which prevents any obſtruction to the circulation of the blood from accidental compreſſion, or even when a knot is caſually made in it by the irregular changes of the poſition of the child. The *funis* is covered by the *amnion* or inner membrane of the *ovum*, and the vein is of a ſufficient ſize to reconduct to the *fœtus* the whole or an equal quantity of blood, to that which is conveyed by the two arteries from it to the *placenta*. The arteries very often twiſt round the vein in a very curious and beautiful manner; ſometimes they run in a parallel line with the vein; and in ſome inſtances the arteries are contorted in ſuch a manner as to make, upon the *funis*, one or more large tumours, or bunches reſembling excreſcences.

When the *embryo* can firſt be perceived, it is found adhering to what afterwards becomes the *placenta*, by a cloſe connexion of the

the *abdomen*. In a ſhort time the uniting part is elongated into a flat and then a conical form, and ſoon becomes a regular umbilical cord, the length and thickneſs of which are generally in proportion to the ſize of the *fœtus*; though every part of the *ovum* is larger according to the ſize of the *fœtus* in early than advanced pregnancy. The *funis* ſeems to be a production of the *placenta*; for, immediately after the birth of the child, there is a line which diſtinguiſhes the fœtal part, where the ſpontaneous ſeparation is afterwards made.

In the thickneſs of the *funis*, which chiefly depends upon the quantity of *mucus* contained in the cells, there is much variety in different ſubjects, and in its length, it being in ſome not more than one foot, and in others exceeding three, four, or even ſix feet; but it is moſt frequently about two feet in length. It is thickeſt near the *abdomen* of the child, and gradually becomes more ſlender as it approaches to the *placenta*, into which it is uſually inſerted about one third from the edge. But there is much difference in this reſpect alſo, and in ſome inſtances the blood veſſels ramify before they reach the *placenta*, and when this happens it may occaſion a difficulty

culty in the extraction, or a ſeparation of the *funis*, even when little force is exerted.

SECTION VIII.

THE *placenta* is a circular, flat, vaſcular, and apparently fleſhy ſubſtance, different in its diameter in different ſubjects *, but uſually extending about ſix inches, or over one fourth part of the ſhell or outſide of the *ovum*. It is more than one inch in thickneſs in the middle, and becomes gradually thinner towards the circumference, from which the membranes are continued. The *placenta* is the principal medium by which the communication between the parent and child is preſerved; but, though all have allowed the importance of the office which it performs, there has been a variety of opinions on the nature of that office, and of the manner in which it is executed.

* In quibuſdam placenta reperitur craſſior, amplior, et ſanguine abundantior.—*Harv.*

That

That ſurface of the *placenta* which is attached to the *uterus* by the intervention of the connecting membrane, is lobulated and convex; but the other, which is covered with the *amnion* and *chorion*, is concave and ſmooth, except the little eminences made by the blood veſſels. It is ſeldom found attached to the ſame part of the *uterus* in two ſucceſſive births; and, though it moſt frequently adheres to the anterior part, it is occaſionally fixed to any other, even to the *os uteri*; in which ſtate it becomes a cauſe of a dangerous hemorrhage at the time of parturition.

The *placenta* is compoſed of arteries and veins, with a mixture of pulpy or cellular ſubſtance *. Of theſe there are two orders very curiouſly interwoven with each other. The firſt is a continuation of thoſe from the *funis* which ramify on the internal ſurface of the *placenta*, the arteries running over the veins, which is a circumſtance peculiar to the *placenta*; and then, ſinking into its ſubſtance, anaſtomoſe and divide into innumerable ſmall branches. The ſecond order proceeds from the *uterus*; and theſe ramify in a ſimilar

* Placentæ ſubſtantia non conſtat glandulis, ſed mire vaſculoſa eſt.—*Ruyſch.*

manner

manner with thoſe from the *funis*, as appears when a *placenta* is injected from the veſſels of the *funis*, and from thoſe of the parent. The veins in their ramifications accompany the arteries as in other parts.

There have been many different opinions with reſpect to the manner in which the blood circulates between the parent and child during its continuance in the *uterus*. For a long time it was believed that the intercourſe between them was uninterrupted; and that the blood propelled by the powers of the parent pervaded, by a continuance of the ſame force, the vaſcular ſyſtem of the *fœtus*. But repeated attempts having been made without ſucceſs, to inject the whole *placenta*, *funis*, and *fœtus*, from the veſſels of the parent, or any part of the *uterus* from the veſſels of the *funis*, it is now generally allowed that the two ſyſtems of veſſels in the *placenta*, one of which may be called maternal, the other fœtal, are diſtinct. It is alſo admitted that the blood of the *fœtus* is, with regard to its formation, increaſe, and circulation, unconnected with, and totally independent of, the parent; except that the matter by which the blood of the

fœtus

fœtus is formed muſt be derived from the parent *.

It is thought that the blood, which has probably undergone ſome preparatory changes in its paſſage through the *uterus*, is conducted by the uterine or maternal arteries of the *placenta* in ſome cells or ſmall cavities of which it is depoſited; and that ſome part of it, or ſomething ſecreted from it, is abſorbed by the fœtal veins of the *placenta*, and by them conveyed to the *fœtus* for its nutriment †. When the blood which circulates in the *fœtus* requires any alteration in its qualities, or when it has gone through the courſe of the circulation, it is carried by the arteries of the *funis* to the *placenta*, in the cells of which it is de-

* Abunde me demonſtraturum arbitror, viviparorum quoque fœtum, dum adhuc in utero continetur, non matris ſanguine nutriri, ſpirituque ejus vegetari, ſed animo viribuſque ſuis frui, ut pullus in ovo ſolet, proprioq; ſanguine gaudere. —*Harv.* Exercitat. xxxiv.

† There is a very ingenious paper in the 2d part of the Medical Journal for the year 1787, written by Doctor *John Clarke*, to prove that the *fœtus* is ſupplied with air by means of the *placenta*.

† See a more particular account of the ſtructure of the *placenta*, in Mr. *Hunter*'s Obſervations on the Animal Œconomy.

poſited,

poſited, and then altered or abſorbed by the maternal veins of the *placenta*, and conducted to the *uterus*, whence it may enter the common circulation of the parent. Thus it appears, according to the opinion of *Harvey* *, that the *placenta* performs the office of a gland, conveying air, or ſecreting the nutritious juices from the blood, brought from the parent by the arteries of the *uterus*, and carried to the *fœtus* by the veins of the *funis* in a manner, probably not unlike to that in which milk is ſecreted from the breaſts.

The veins in the *placenta* are mentioned as the abſorbents, becauſe no lymphatic veſſels have yet been diſcovered in the *placenta* or *funis*; nor are there any nerves in theſe parts; ſo that the only communication hitherto diſcovered, between the parent and child, is by the vaſcular ſyſtem.

The proofs of the manner in which the blood circulates between the parent and child are chiefly drawn from obſervations made upon the *funis*. When it was ſuppoſed that the child was ſupplied with blood in a direct

* Placenta ſuccum alibilem a matre provenientem nutriendo fœtui concoquit.—*Harv.* Exercitat. de Uteri Membranis.

ſtream

ſtream from the parent, it was aſſerted that, on the diviſion of the *funis*, if that part next to the *placenta* was not ſecured by a ligature, the parent would be brought into extreme danger, by the hemorrhage which muſt neceſſarily follow. But this opinion, which laid the foundation of ſeveral peculiarities in the management of the *funis* and *placenta*, is prove not to be true. For, if the *funis* be compreſſed immediately after the birth of the child, and whilſt the circulation in it is going on, the arteries between the part compreſſed and the child throb violently, but thoſe between the compreſſion and the *placenta* have no pulſation; but the vein between the part compreſſed and the *placenta* ſwells, and that part next to the *fœtus* becomes flaccid. But, if under the ſame circumſtances the *funis* be divided, and that part next the child be not ſecured, the child would certainly loſe its life by the hemorrhage, yet the mother would ſuffer no inconvenience if the other part was neglected. It is moreover proved, that a woman may die of an hemorrhage occaſioned by a ſeparation of the *placenta*, and the child be nevertheleſs born, after her death, in perfect health. But if the *placenta* be injured, without

out ſeparation, either by the rupture of the veſſels which paſs upon its inner ſurface, or in any other way, the child, being deprived of its proper blood, would periſh, yet the parent might eſcape without injury.

SECTION IX.

By the *placenta* and membranes which are expanded from its edge, a complete *involucrum* of the *fœtus* and waters is made. They form at the ſame time a lining to the *uterus*; and, when expelled after the child is born, go under the common term of after-birth or *ſecundines*.

In the deſcription of the membranes of the *ovum*, given by different writers, there is great diſſimilarity; and it appears that much of that confuſion which became the ground of controverſy aroſe from the ambiguity of the terms uſed, and from the examination of the *ova* at different periods of pregnancy; ſo that every deſcription might have been juſt, though

no two repreſentations had been the ſame. They have uſually been mentioned as two, the *amnion** and the *chorion*† ; and the latter has again been divided into the true and the falſe. The third membrane, which from its appearance has likewiſe been called the villous or ſpongy ‡, and from the conſideration of it as the inner *lamina* of the *uterus* caſt off, as was before obſerved, like the *exuviæ* of ſome animals, the *decidua*, has been deſcribed by *Harvey* not as one of the membranes of the *ovum*, but as a production of the *uterus*. How far a very accurate account of the conſtituent parts of the *ovum*, with all the changes they undergo, may be wanted for the perfection of natural hiſtory, I cannot pretend to decide; but in the practice of midwifery it doth not appear neceſſary.

It is however requiſite that we ſhould have a competent knowledge of the membranes of the *ovum* at the full period of utero-geſtation, and the following explanation ſeems to be ſufficient: There is, firſt, the outer or con-

* Quod fœtum amiciat et obvolvat.—*Harv.*

† A venarum copia ſive choro nomen obtinuit.—*Idem.*

‡ Mihi liceat nominare membranam placentæ, villoſam. —*Ruyſch.* Theſ. Anatom. vi. 41.

necting

necting membrane, which is flocculent, ſpongy, and extremely vaſcular, completely inveſting the whole *ovum*, and lining the *uterus*; ſecondly, the middle membrane, which is nearly pellucid, with a very few ſmall blood veſſels ſcattered over it, and which forms a covering to the *placenta* and *funis*, but does not paſs between the *placenta* and *uterus*; thirdly, the inner membrane, which is tranſparent, of a firmer texture than the others, and lines the whole *ovum*, making, like the middle membrane, a covering for the *placenta* and *funis*. With the two laſt the *ovum* is clothed when it paſſes from the *ovarium* into the *uterus*, where the firſt is provided for its reception. Theſe membranes, in the advanced ſtate of pregnancy, cohere ſlightly to each other *, though in ſome *ova* there is a conſiderable quantity of fluid collected between them, which, being diſcharged when one of the outer membranes is broken, forms one of the circumſtances which has been diſtinguiſhed by the name of *bye*, or falſe waters.

Between the middle and inner membrane, upon or near the *funis*, there is a ſmall, flat and

* Amnios et chorion ſibi invicem leviter cohærent.—*Ruyſch.*

oblong body, which, in the early part of pregnancy, ſeems to be a veſicle containing lymph, which afterwards becomes of a firm and apparently fatty texture. This is called the *veſicula umbilicalis*, but its uſe is not known.

SECTION X.

ALL that fluid which is contained in the *ovum* is called by the general name of the waters, or the waters of the *amnion* or *ovum*. The quantity, in proportion to the ſize of the different parts of the *ovum*, is greateſt by far in early pregnancy. At the time of parturition, in ſome caſes, it amounts to or exceeds four pints, and in others it is ſcarcely equal to as many ounces. It is uſually in the largeſt quantity when the child has been ſome time dead, or is born in a weakly ſtate.

This fluid is generally tranſparent, often milky, and ſometimes of a yellow or light brown colour, and very different in conſiſtence; and theſe alterations ſeem to depend upon the ſtate of the conſtitution of the parent.

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It does not coagulate with heat like the ſerum of the blood; and, chemically examined, it is found to be compoſed of phlegm, earthy matter, and ſea ſalt, in different proportions in different ſubjects, by which the varieties in its appearance and conſiſtence are produced. It has been ſuppoſed to be excrementitious, but it is generally thought to be ſecreted from the internal ſurface of the *ovum*, and circulatory as in other cavities.

It was formerly imagined that the *fœtus* was nouriſhed by this fluid, of which it was ſaid to ſwallow ſome part frequently; and it was then aſſerted that the qualities of the fluid were adapted for its nouriſhment. But there have been many examples of children born without any paſſage to the ſtomach; and a few of children in which the head was wanting, and which have nevertheleſs arrived at the full ſize. Theſe caſes fully prove that this opinion is not juſt, and that there muſt be ſome other medium by which the child is nouriſhed beſides the waters. The incontrovertible uſes of this fluid are to ſerve the purpoſe of affording a ſoft bed for the reſidence of the *fœtus*, to which it allows free motion, and prevents any external injury during preg-

nancy; and, incloſed in the membranes, it procures the moſt gentle, yet efficacious, dilatation of the *os uteri* and ſoft parts at the time of parturition.

Inſtances have been recorded in which the waters of the *ovum* are ſaid to have been voided ſo early as in the ſixth month of pregnancy, without prejudice either to the child or parent. The truth of theſe reports ſeems to be doubtful, becauſe when the membranes are intentionally broken, the action of the *uterus* never fails to come on, when all the water is evacuated. A few caſes have occurred to me in practice, which might have been conſtrued to be of this kind; for there was a daily diſcharge of ſome colourleſs fluid from the *vagina* for ſeveral months before delivery; but there being no diminution of the ſize of the *abdomen*, and the waters being regularly diſcharged at the time of labour, it was judged that ſome lymphatic veſſel near the *os uteri* had been ruptured, and did not cloſe again till the patient was delivered. I have alſo met with one caſe, in which, after the expulſion of the *placenta*, there was no ſanguineous diſcharge, but a profuſion of lymph, to the quantity of ſeveral pints, in a few hours after delivery;

delivery; but the patient ſuffered no inconvenience, except from the ſurpriſe.

The diſeaſes of the different parts of the *ovum* will be conſidered when we ſpeak of the cauſes of abortion.

SECTION XI.

It hath been obſerved that the ſtate of the *uterus* was, in many reſpects, altered in conſequence of impregnation. Beſides the derivation of a greater quantity of blood to it and the neighbouring parts, and the formation of the connecting membrane of the *ovum*, it is endued with the properties of diſtention and aſcent into the cavity of the *abdomen*.

The *fundus* of the *uterus* is the part firſt diſtended, and afterwards the inferior parts in regular order; at length the *cervix* is obliterated, except the mere circle of the *os uteri*; and the *uterus*, which was originally pyriform, becomes nearly oval. The diſtention is alſo more conſiderable on the poſterior than the anterior part, which is one cauſe of the change

of poſition, and courſe of the *fallopian* tubes and ligaments. Theſe, in the unimpregnated ſtate, depart from the corners of the *fundus* of the *uterus* nearly at right angles; but, towards the concluſion of pregnancy, they go off from the fore part near the *cervix*, as was before obſerved. This diſtention is evidently not mechanical from the enlargement of the *ovum*, but from the acceſſion of a new principle; for the *uterus* is never fully upon the ſtretch, like a bladder inflated with air, but relaxed in ſuch a manner as to be apparently capable of bearing the farther increaſe of the *ovum* without inconvenience.

The *uterus* is placed between the bladder and *rectum*, the *os uteri* being generally projected a little backwards, ſo that the *axis* of the cavity of the *uterus* correſponds with that of the *pelvis*. After conception, the weight of the *uterus* being increaſed, it ſubſides lower into the *vagina*, the ſhortneſs of which is therefore reckoned one of the equivocal ſigns of pregnancy. But, after a certain time, the *uterus*, though more increaſed in weight, begins to aſcend, which it continues to do till it emerges out of the *pelvis*, acquiring ſupport from the ſuperior and anterior part of the aperture;

aperture; in which diſpoſition and ſtate it remains till the changes previous to labour come on. In the latter part of pregnancy the *vagina* muſt therefore be elongated, and the effects of the temporary abbreviation and elongation are readily diſcovered in thoſe pregnant women who have a *procidentia* of the *uterus*, or a tendency to it, in whom the complaint is aggravated in the early, and leſſened in the latter part of pregnancy.

In the firſt pregnancy the *uterus* riſes almoſt directly upwards, becauſe the integuments of the *abdomen* ſupport it forwards; and the diſtention may be readily perceived on each ſide, but commonly on one ſide more than the other, from the poſition of the child. In ſubſequent pregnancies the *uterus* projects forwards, the integuments generally yielding with greater or leſs readineſs, according to the number of children which a woman hath before had; but it always lies before the *viſcera* of the *abdomen*, which are raiſed higher and protruded backwards in proportion to its aſcent and diſtention.

Through the integuments of the *abdomen* the *uterus* may be felt ſpringing out of the *pelvis*, about the fourth month of pregnancy;

in

in the fifth about the midway between the *pubes* and navel; in the ſixth as high as the navel; in the ſeventh half-way between the navel and *ſcrobiculus cordis*; and in the eighth as high as the *ſcrobiculus cordis*: in the ninth month it uſually begins to ſubſide; ſo that, at the time of parturition, the *fundus* of the *uterus* is not higher in the *abdomen* than in the ſeventh, if the *uterus* be in a proper diſpoſition to act; but when that is not the caſe the *fundus* will be as high as the *ſcrobiculus cordis*, even when the woman is in labour.

At the time of labour a new principle ſuperſedes thoſe of diſtention and aſcent*. This gives a diſpoſition to the *uterus* to exclude whatever is contained in its cavity, and the effect produced is in proportion to the energy of the principle and the power of the *uterus*. A perfect intelligence of this principle, and of the mode of its operation, would probably be of infinite uſe in practice, as we might be enabled to ſuppreſs the action thereby occaſioned when premature, moderate it when too violent, ſtrengthen it when too feeble, and regulate it in a variety of ways conducive to the

* Expultrix uteri facultas inſurgit et excitatur. Fœtus ab utero compreſſus, propulſatus atque expreſſus.—*Fabr. ab Aquapendente.*

welfare of our patients. On the knowledge we at preſent have of the manner in which this principle operates, and the circumſtances by which it is influenced, the aſſiſtance which ſcience and dexterity can give, in caſes of difficult parturition, very much depend.

But this expulſatory power, which takes place at the time of parturition, does not ſeem to be peculiar to the *uterus*, but to proceed from a general principle diffuſed through the whole body, which acts in a like manner whenever an offended part makes an extraordinary effort to free itſelf from any offending body; and the mode of its operation is according to the general laws of the animal œconomy. It is in common obſervation, that no violent action can be of long duration; and it might therefore be expected that the efforts made by the *uterus*, for the purpoſe of expelling the child at the time of birth, would be periodical; and attended with pain, from the diſtention and preſſure which the reſiſting parts undergo, as we ſhall have occaſion to obſerve when we ſpeak of natural labours.

It was ſaid that this expulſatory action was not peculiar to the *uterus*, but a property common

common to all parts of the body, when the longer continuance of any thing extraneous was likely to become hurtful. Their efforts on ſuch occaſions, like thoſe of the *uterus* at the time of labour, are obſerved to be periodical, and accompanied with pain proportionate to the action and the ſenſibility of the part. Thus, in the caſe of a ſtone in the bladder, what is called a fit of the ſtone ſeems to be a conſequence of an effort made by the bladder to expel the ſtone when injured by it; or when a ſmall ſtone is paſſing through the ureters from the kidnies to the bladder. In the coacervation of the *fæces* in the *rectum* alſo, when the common action of the inteſtines is not ſufficient for their expulſion, an extraordinary action is excited periodically, which is attended with pain, returning like the action at intervals, and proportioned to it. Perhaps a more appoſite illuſtration of a labour may be taken from ſtones paſſing from the gall-bladder to the inteſtine. Theſe may continue inoffenſive in the bladder for a conſiderable time after their formation; but when an effort is made to exclude them it is always accompanied with pain, periodical in its returns, and excruciating in its degree, from the

the ſenſibility of the parts immediately affected or drawn into conſent.

Of the primary cauſes of this general property we may juſtly be ſaid to be ignorant, as we are likewiſe of that of the action of the *uterus* in particular, except from its effects. But the cauſes appear to be different. Firſt, there is the genuine or original cauſe, which produces the action of the *uterus* at a proper time and in a proper manner; ſecondly, adventitious cauſes operating upon the *uterus*, and producing that action to which it is diſpoſed, at an improper time, and in an irregular manner; thirdly, ſympathetic cauſes, when a diſturbance originates in ſome parts connected with or conſenting with the *uterus*, and is transferred or ſpread from the part firſt affected to the *uterus*.

We may ſearch for the original or genuine cauſe of the action of the *uterus* in its ſtructure, form, or qualities, or ſome peculiar, though inexplicable impreſſion made upon it by the child, at the full period of utero-geſtation. The manner in which the effects are produced is much influenced alſo by the circumſtances of the conſtitution, as its ſtrength and diſpoſition to act; and it appears that the

blood

blood is of much importance in this reſpect; for, in hemorrhages, though there be a diſpoſition in the *uterus* to act, there is no power of action; and in other caſes, when there is apparently no want of ſtrength, the diſpoſition to act is wanting.

The action of the *uterus* is totally independent of the will, and therefore often comes on during ſleep, having produced its effect before the patient is awake. But, if the whole frame be diſturbed by any violent emotion of the mind, the action of the *uterus* may be induced, obſtructed, or ſuppreſſed. The progreſs of a labour is therefore often retarded by ſuch paſſions as depreſs the ſpirits; as, on the contrary, it is accelerated by cheerfulneſs, by reſolution, and a certain preparation of the mind for enduring pain and fatigue.

Opinions were formerly much divided with reſpect to the ſtate of the *uterus* during pregnancy, but it was generally imagined to become thinner in proportion to its diſtention. But later obſervations have proved that it retains its thickneſs through the whole period, to whatever degree it may be diſtended. By this thickneſs, which is the medium of its ſtrength, the human *uterus* is capable of exerting infinitely

greater

greater power for the expulſion of its contents than that of any animal. Had there been a neceſſity for an equal degree of force, animals would have failed to perform the office of parturition, becauſe there is not the ſame medium by which that force could have been exerted. As greater force is therefore required and exerted in human parturition than in that of animals, there muſt of neceſſity be a greater degree of pain, even if we allow them to have an equal degree of ſenſibility.

The adventitious cauſes of the action of the *uterus*, which are numerous, may ariſe from the general ſtate of the body, as a fever; or the particular ſtate of the *uterus*, as a diſeaſe of the part itſelf; or ſome extraneous irritation of the *os uteri*, between which and the *uterus* there ſeems to be a conſent ſimilar to that between the *cardia* and the ſtomach. This was known to the ancients, who occaſionally introduced irritating ſubſtances into the *vagina*, for the purpoſe of facilitating or accelerating the birth of the child. But, with regard to adventitious cauſes of every kind, it appears that their effect continues only ſo long as they are applied, and the action of the *uterus* produced by them is leſs

perfect

perfect than when it arises from the genuine cause. Thus, if the premature action of the *uterus* be brought on by irritation of the *os uteri*, it proceeds only during the continuance of the irritation, unless it be urged till the original cause of the action of the *uterus* should supervene. Hence the observation was made, that if the *os uteri* has been untimely dilated by any improper management it will close again, and the woman often go on to her full time, if she be kept in a quiet state*.

The sympathetic causes of the action of the *uterus* may arise from the disturbance of any part with which the *uterus* is connected or disposed to consent, as is the case with all the contents of the *abdomen*, especially with the lower part of the intestinal canal and the bladder, as in a *tenesmus* or strangury. On the removal of these, the action of the *uterus* caused by them will presently cease; but if the disturbance be violent, and of long continuance, the *uterus*, though the original cause be wanting, may assume that action to which, by its structure, it is disposed, at any period of pregnancy, and the exclusion of its contents will of course follow.

* See *Chapman*'s Treatise on Midwifery, chap. v. case i.

From

From adventitious and ſympathetic cauſes the action of the *uterus* is often produced at the latter part of pregnancy, and from the want of a juſt diſtinction encouraged, to the great detriment of the patient. In ſuch caſes the action of the *uterus* may continue during the continuance of the cauſe, or it may become regular, proceeding after the cauſe is removed, or it may ceaſe entirely on the removal of the cauſe. Of all theſe there are frequent inſtances in practice; and, ſeeing there is ſuch variety in the cauſes of the action of the *uterus*, it is not ſurpriſing that there ſhould be ſuch difference in the effect produced, and ſo many deviations from the ordinary courſe of labours.

All the difficulties attending parturition may be reduced to two kinds; firſt, thoſe which ariſe from the imperfect action of the *uterus*; ſecondly, thoſe which are occaſioned by the reſiſtance made to that action when duly exerted. The regulation of, or beſt method of aſſiſting that action or power, and the removal of the impediments to its effect, are the chief objects in the practice of midwifery.

CHAPTER VI.

SECTION I.

ON THE SIGNS OF CONCEPTION, AND THE DISEASES OF PREGNANCY.

CONCEPTION is ſucceeded by many important changes in the conſtitution, and uſually by affections of various parts, which, in the beginning of pregnancy, are eſteemed *ſigns* that a woman hath conceived: but, in the more advanced ſtate, the ſame or ſimilar changes and affections have been termed and conſidered as the *diſeaſes of pregnancy*. Yet, in either ſtate, they evidently do not depend upon pregnancy as a ſpecific cauſe, being often occaſioned by irritation or diſturbance of the *uterus* from other cauſes. Nor do they commence with conception, and continue to the time of parturition; but are in general moſt frequent, and moſt troubleſome alſo, ſoon after conception, gradually abating, and often wholly diſappearing, as the patient advances

vances in pregnancy. The ſigns of conception are therefore very ambiguous and uncertain; though, from the common occurrence of the caſe, and the particular attention which is paid, a faculty of diſcriminating them is acquired, which generally prevents error.

It is a popular obſervation, confirmed by experience, that thoſe women are leſs ſubject to abortion, and ultimately fare better, who have ſuch ſymptoms as generally attend pregnancy, than thoſe who are exempt from them. The ſtate of pregnancy is then an altered, but cannot with propriety be called a morbid ſtate. But if the term *diſeaſe* be uſed on this occaſion, with the intention of giving a more intelligible explanation of the temporary complaints to which women are then liable, or to denote their irregularity, or an exceſſive degree of them, it may be retained. With this view the diſeaſes of pregnancy may be divided into two claſſes; in the firſt of which will be included all thoſe which occur in the early, and in the ſecond thoſe in the latter part of pregnancy. The time of *quickening* may conſtitute the line of diſtinction between them; and we ſhall thus be led to the moſt uſeful method of proceed-

ing, that of obſerving the complaints in the order in which they ariſe.

It appears that every part of a living body has two principles, or performs two offices; one of which regards its own diſtinct preſervation and eaſe; the other, by which each part contributes to and partakes of the harmony or diſorder of the whole frame. The degree of diſpoſition and ability to perform theſe offices, and the manner in which they are performed, vary in different parts, and for peculiar purpoſes; but it may be preſumed that they both potentially exiſt in every part, though not at all times actually exerted. When theſe offices are executed in a manner and degree neceſſary for, and conſiſtent with, the common purpoſes of *being*, they are called natural; but when they are irregular or exceſſive, or are excited on extraordinary occaſions, though the exiſtence of the occaſion may render them needful, they are not improperly termed violent or morbid. The diſpoſition to act is called irritability, and the action, when produced, irritation. Irritation is deſcribed to be of two kinds. It may be confined to the part in which the cauſe exiſts, or it may be transferred and extended to ſome

diſtinct or diſtant part. The firſt is called ſimple irritation, and the latter ſympathy or irritation by conſent. Sympathy*, or irritation by conſent, has again been diſtinguiſhed into two kinds, primary or direct, and ſecondary or intermediate. The modes of this conſent between diſtinct and diſtant parts have been variouſly explained, and aſſigned to many different cauſes †; but with the propriety of the explanations, or the ingenuity of theories, we are not, on the preſent occaſion, concerned.

The truth of no obſervation in medicine has been more generally acknowledged than

* Diſtinguitur irritabilitas in primariam ſeu directam, et ſecundariam ſeu per conſenſum.—*Gliſſon, Tractat. de Ventric. et Inteſtin.*

† Quinque adminicula, quibus una pars alterius affectum ſua naturali perceptione eouſque cognoſcat, ut eidem compatiatur, propoſuero. Primum eſt immediata continuitas, præſertim fibrarum et tunicarum partium; ſecundum nervorum a communi ſtipite derivatio; tertium, influxus per arterias mutatus; quartum, reductio per venas præpedita aut diminuta; quintum, contactus vel alia idonea vicinitas, qua una pars in aliam agat.

Gliſſon, who was phyſician to Queen Elizabeth, has a right to be eſteemed the father of the doctrine of irritability. He uſes the word *perception* for irritability, and the word irritability for ſympathy, or diſpoſition to conſent.

that of the extreme irritability of the *uterus*, and of the propenſity which the whole body has to be affected or diſturbed by its influence *. Some parts are nevertheleſs more diſpoſed to this influence than others, ſome by direct conſent, and ſome by the interpoſition of other parts. Thoſe affections which occur moſt frequently during, or in conſequence of pregnancy, it is neceſſary that we ſhould underſtand, that we may be able to form a competent judgment of the ſubject; and for this purpoſe the following account will be ſufficient either in the way of illuſtration or example.

Between the *uterus* and the breaſts the conſent is ſo intimate and conſtant, that it is ſcarcely poſſible for them to be affected ſeparately. The enlargement of, and ſhooting pains in, the breaſts are therefore not improperly enumerated among the ſymptoms of pregnancy; though they are alſo obſerved to occur at the time of the final ceſſation of the *menſes*, when theſe are caſually obſtructed, and in ſome women in a ſlight degree at each period of menſtruation.

* Eſt enim uterus pars principalis, quæ totum corpus facile in conſenſum trahit.—*Harv.* Exercitat. de Partu.

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The *areola*, or brown circle round the nipples, has been repreſented as an indubitable mark of pregnancy. This is not however ſuſpected to be a primary conſequence of a particular affection of the *uterus*, but of the preceding enlargement of the breaſts; and, though it generally occurs in pregnancy, it may be produced by any cauſe capable of giving to the breaſts a ſtate reſembling that which they are in at the time of pregnancy, of which it can only be eſteemed a doubtful ſign. Equally or more uncertain, for the ſame reaſon, is uneaſineſs about the navel, and in the region of the *uterus*, though frequently attendant upon pregnancy; and which, as far as I know, is a ſymptom peculiar to affections of the *uterus*. The navel alſo conſtantly emerges during pregnancy.

There are few diſeaſes of much importance in any part of the body in which the ſtomach is not affected; but the conſent between this and the *uterus* is peculiarly frequent, and often violent. It is not therefore ſurpriſing that the ſtomach during pregnancy ſhould ſo generally be diſturbed with *nauſea*, vomiting, heartburn, and indigeſtion; or that ſuch com-

plaints ſhould have been conſidered as the ſymptoms of pregnancy.

In conſequence of theſe affections of the ſtomach, and perhaps by direct conſent with the *uterus*, any part of the inteſtinal canal may be diſturbed during pregnancy; but the particular part may be caſual, and the manner will depend upon ſome peculiarity in the conſtitution of different women, as the ſame cauſe may produce very different or contrary effects. Some women, who are at all other times conſtipated, have a *diarrhœa* at each period of menſtruation; and thoſe who are at other times ſubject to a *diarrhœa* then become unuſually coſtive; and ſimilar changes often take place when women are pregnant.

The whole habit of the body may be diſturbed by a certain ſtate of the *uterus*, and yet no individual part be peculiarly affected. Hence, at the time of pregnancy, there frequently occurs a feveriſh diſpoſition, with debility, emaciation, and many ſymptoms common to hectic fevers; by which the countenance becomes altered, the eyes appear larger, the mouth wider, and a ſharpneſs is given to every feature. In conſequence alſo of this

general

general and perpetual irritation, the temper of pregnant women is ſometimes rendered leſs gentle and patient than is conſiſtent with their uſual character.

The conſent between the *uterus* and ſtomach ſeems to be of that kind which has been called primary or direct; but affections of the brain, heart, and lungs, appear to be ſecondary, or by the intervention of the ſtomach. Pain and giddineſs of the head, dimneſs of the ſight, ſleepineſs, convulſions, palſy, palpitation of the heart, and peripneumonic complaints, though they ſometimes occur during pregnancy, are leſs frequent than ſuch as are produced by the direct conſent of any part with the *uterus*.

There are alſo many inſtances of affections of the *uterus* from its conſent with other parts. A ſtrangury, or *teneſmus*, may occaſion a ſimilar affection of the *os uteri*; and if they were to continue, a premature expulſion of the *fœtus*. Pain in the ſtomach or bowels, or of any part contiguous to the *uterus*, or with which it is prone to conſent, may diſturb it; and, if extremely violent, or of long continuance, may produce the ſame effect. From

theſe

theſe it appears that, when an abortion is apprehended, there is not only occaſion to attend to and moderate thoſe circumſtances which may ariſe from original affections of the *uterus*, but thoſe alſo which may be produced in ſome other part, and extend to the *uterus*.

From theſe obſervations it will not be inferred that every complaint which happens to pregnant women is to be attributed to uterine irritation. For ſome appear to be cauſed mechanically by the preſſure of the enlarged *uterus*, and all of them to be aggravated by the erect poſition of the body. The diſtinction which was made will nevertheleſs be equally proper; for, before the time of *quickening*, the complaints are generally owing to an increaſed irritability of the conſtitution, or to the admiſſion of a new cauſe of irritation; and afterwards to the enlargement of the *uterus*. But, without a very ſtrict adherence to any general diſtinction, we will recollect that a ſmall degree of enlargement of the *uterus*, with its conſequent irritability, may become the cauſe of diſeaſe in early pregnancy; and that ſuch a degree of irritability may ariſe or continue towards the

the concluſion, as will create ſymptoms like thoſe which might be expected at the commencement.

SECTION II.

By the term *quickening* is underſtood the firſt ſenſation which the mother has of the motion of the child. This happens at different periods of pregnancy, from the tenth to the twenty-fifth week, but moſt commonly about the ſixteenth after conception; but the motion of the child is in ſome women ſo obſcure, or ſuch little attention is paid to it, that it is not perceived or regarded, and in others ſo indiſtinct as to be confounded with various other ſenſations. In caſes therefore of ſuppoſed, but miſtaken pregnancy, women often fancy that they feel the motion of the child; or, if a child dies *in utero*, when there is, after birth, the fulleſt proof that it has been long dead.

It is not unuſual for women to have a few drops of blood diſcharged from the *vagina* at the

the time of quickening without any inconvenience; but the ſymptoms which attend are generally ſuch as are occaſioned by ſurpriſe from any other cauſe, as fainting, or ſome hyſteric affection. Theſe being of ſhort duration require no other means of relief than expoſition to the open air, a glaſs of cold water, or ſome light cordial, and a ſhort confinement to an horizontal poſition.

The changes which follow quickening have been attributed to various cauſes. By ſome it has been conjectured that the child then acquired a new mode of exiſtence; or that it was arrived to ſuch a ſize as to be able to diſpenſe with the menſtruous blood, before retained in the conſtitution of the parent, which it diſturbed by its quantity or malignity. But it is not now ſuſpected that there is any difference between the aboriginal life of the child, and that which it poſſeſſes at any period of pregnancy, though there may be an alteration in the proofs of its exiſtence, by the enlargement of its ſize, and the acquiſition of greater ſtrength. It was before obſerved, that the notion of the influence of the retained *menſes* ſeemed to have been admitted without foundation. Others have believed that the

the changes ought to be aſſigned merely to the enlargement of the *uterus*, increaſed by the growth of the *ovum* to ſuch a ſize, that it was ſupported above the brim of the *pelvis*; by which means all the inconveniences which aroſe from the dragging or ſubſidence of the *uterus* in the *vagina* were removed: and this ſeems to be the true reaſon. Becauſe, in morbid enlargements of the *uterus*, not of a ſcirrhous or cancerous nature, there is an abatement of the ſymptoms when it becomes of a certain ſize; which circumſtance has often rendered patients an eaſy prey to empirics, who have availed themſelves of the impreſſions made by the caſual and temporary relief as the critical moment for impoſition. But if the explanation is not ſatisfactory the changes are very important; for whatever complaints women before ſuffered, in general after the time of quickening they decline or are wholly removed.

SECTION

SECTION III.

A SUPPRESSION of the *menſes* is one of the neverfailing conſequences of conception, at leaſt I have not met with a ſingle inſtance of any woman continuing to menſtruate when ſhe was pregnant; though I know that popular opinion is againſt the aſſertion, and that exceptions to it are frequently mentioned by men of ſcience. What gratification the human mind is capable of receiving by the affectation of ſingularities of conſtitution, which do not depend upon our will or power, and from which neither reputation nor advantage can be derived, philoſophers may determine. But it is well known that in practice there is great occaſion to be circumſpect; for, either from the miſrepreſentation of patients, or the credulity or vanity of writers, many medical works are filled with the moſt uſeleſs and improbable hiſtories, and defective in the eſſential article of all records, truth; and this charge hath been made in the moſt pointed terms againſt many writers on the ſubject of

of midwifery. Some who have ſaid that women might menſtruate during pregnancy have ſuppoſed the diſcharge to be made from the veſſels of the *vagina* or neighbouring parts; or they have conſidered every eruption of blood from the *uterus* as menſtruous. But if menſtruation, according to the definition already given, had continued in pregnancy, it is ſcarcely poſſible but that abortion muſt have followed, as a part of the *ovum* would neceſſarily have been detached from the *uterus* at every period; unleſs we conclude that, by ſome ſubſequent proceſs, their connexion had been re-eſtabliſhed. As therefore, in caſes in which pregnancy can be ſuſpected, we have, in the ſuppreſſion of the *menſes*, the beſt proof of its exiſtence, and in their continuance, of the contrary; it will be wiſer to place our confidence in, and to form our judgment by this circumſtance, as leaſt liable to error, than to involve ourſelves in doubt, by ſearching after equivocal appearances which cannot lead to any ſatisfactory concluſion. But though it may be laid down as a general principle that, when women continue to menſtruate they are not pregnant, it will not follow, that in every caſe of the ſuppreſſion

preſſion of the *menſes* women are certainly pregnant, though pregnancy is always to be ſuſpected; as I have known many inſtances of married women who have ceaſed to menſtruate for ſeveral months, independently of any diſeaſe, when they were not with child.

SECTION IV.

ALL the complaints attending pregnancy, and perhaps the ſtate of pregnancy, is accompanied with a febrile diſpoſition. This ſeems to be proved by the blood of pregnant women, which, independently of diſeaſe, is always found to have what is called a ſizy appearance, though of a peculiar kind, and evidently very different from that which is obſerved in caſes of inflammation, and which may be conſidered as a conſequence of ſome new or ſpecific action. But if any inflammatory diſeaſe ſhould occur in pregnancy then the blood loſes its pregnant appearance, as it may be termed, and aſſumes that of the diſeaſe. An extreme degree of thoſe ſymptoms which appertain

appertain to pregnancy may alſo produce this inflammatory appearance of the blood. From this ſtate of the blood, and from the relief which bleeding almoſt univerſally affords in the urgent complaints of pregnant women, even in conſtitutions which at other times do not well bear that evacuation, occaſion hath been taken to attribute all the conſequences of pregnancy to a *plethora*, of which the retained *menſes* were thought to be the cauſe. But if it be true that pregnant women have ſuch feveriſh diſpoſition, we have no reaſon to be ſolicitous about the inveſtigation of the cauſe, as, by bleeding at proper times, and in quantities ſuited to the conſtitution and indications, both the effects of uterine irritation and *plethora* are generally leſſened or removed.

Particular kinds of diet are found to add to this diſpoſition to inflammation, and to increaſe irritability. Of theſe the principal is animal food, though it is uſually recommended, together with liquids of a cordial and nutritive quality, to women when pregnant, on the preſumption that they are then in greater need of ſuch ſupport than at any other time. To ſome conſtitutions, and under particular

circumſtances, theſe may be neceſſary; but, if it be juſtifiable to draw inferences from the appetites of pregnant women, or if we may judge from the common conſequences of ſuch diet, we ſhall ſoon be convinced that it is improper, for they have generally a diſlike to animal food of every kind and under every form; and if prevailed upon to eat it incautiouſly, are ſenſible of much inconvenience. On the contrary, they prefer vegetables, fruit, and every thing cooling, which they eat and drink with avidity, and in which they indulge without prejudice.

SECTION V.

PREGNANT women are not only encouraged to live more luxuriouſly, but more indolently alſo, exerciſe being thought improper, unleſs towards the concluſion of pregnancy, when it has been ſuppoſed to procure a more favourable delivery. Great care may in ſome caſes be neceſſary, but in general the contrary method

method of proceeding is the moſt eligible and proper: for the lower claſs of women, who are by neceſſity obliged to follow laborious occupations in the open air, and who are expoſed to all the viciſſitudes of the weather, not only paſs the time of their pregnancy with fewer complaints than the affluent, but have alſo more eaſy labours. Much allowance muſt be made to the former habits of living; but thoſe who are in poſſeſſion of all the advantages of rank and fortune, which the eyes of inferiors are apt to look at with envy, muſt uſe them with the moſt cautious moderation, or they will ſuffer for every unreaſonable indulgence. By every kind of habitual irregularity the conſtitution becomes loaded, or the activity of its powers leſſened or perverted, and a diſpoſition to diſeaſe is given; or all ſenſe of natural enjoyment is loſt. We have been accuſtomed to conſider parturition as a diſtinct act of the conſtitution, unconnected with any which precedes or follows; but there would be more utility in conſidering it as a part of a proceſs, beginning with conception, and terminating with childbed. We ſhould then preſume that ſuch as the ſtate of the body is at the time of conception,

tion, ſuch will it be during pregnancy; and, according to the ſtate in pregnancy, will be that at the time of parturition; and on this again will depend the recovery from childbed, unleſs there be ſome peculiar imperfection in the conſtitution, or ſome diſeaſe not dependent upon that ſtate ſhould ſupervene. On the due and regular exerciſe of all the functions and powers of the body, their diſpoſition and ability to act, according to their original frame, muſt ultimately depend; and ſuch as is their general condition at the time of labour, ſuch will be that of the *uterus*, and of all the parts concerned in parturition. But if there has been indulgence in improper habits, or if exerciſe has been neglected at all other times, there is little cauſe to expect advantage from unfit and extraordinary efforts towards the concluſion of pregnancy, as no other end can then be anſwered by ſuch conduct but that of diſturbing the frame, and bringing on premature labour. In quadrupeds, which apparently ſuffer little other inconvenience when they are with young than that which ariſes from mere increaſe of bulk, their common purſuits are neglected, the gregarious diſpoſition is ſuſpended, and, if left to their own inclinations,

inclinations, they gradually leſſen the exerciſe they uſe as they advance in pregnancy.

SECTION VI.

VOMITING is one of the moſt frequent complaints to which women are liable in the early part of pregnancy, and it ſometimes continues to or returns towards the concluſion. If it ſhould not be violent, and occur only in the early part of the day, though very troubleſome, it is ſo far from being detrimental that it is generally found to be ſerviceable, by exciting a more vigorous action of the *uterus*, and by bringing the ſtomach into a better ſtate. For the vomiting of pregnant women is not a mere effort of ſtraining, or a diſcharge of the food and common humours of the ſtomach; the matter evacuated is evidently of ſuch a kind that, if it had remained, it muſt have been prejudicial. When, therefore, medicines are given for the purpoſe of reſtraining the vomiting, care ſhould be taken

to procure ſtools, or worſe conſequences may be expected than thoſe which would have ariſen from the vomiting.

In plethoric habits the act of vomiting may render bleeding neceſſary, though the diſeaſe or ſtate of which it is a ſymptom might not require that evacuation. For this reaſon, and becauſe it leſſens the irritability of the habit, bleeding will in many caſes be neceſſary in pregnancy; though, under ſome circumſtances, it is neither requiſite nor proper. Nor are medicines of any kind wanted to reſtrain the vomiting, except it ſhould be extreme, ſo that the ſtrength of the patient is reduced, or other untoward conſequences follow. Then the common means uſed for the relief of this ſymptom in other caſes may be ſafely and properly adviſed for pregnant women; as the ſaline draughts in the ſtate of efferveſcence, or mixed with ſome abſorbent earth, in the manner of the *miſtura corollata* of *Fuller*; or magneſia in ſimple peppermint-water; or the *Seltzer* water, whilſt it efferveſces, with a mixture of lemon juice and ſugar; or the acid elixir of vitriol in cold water; or ſmall quantities of *Colombo* root; or chamomile flowers, joined with ſome aromatic,

matic, in ſubſtance or infuſion. Moderate cordials are ſometimes required; and of theſe the moſt grateful is the *confectio alkermes*, in ſimple mint or cinnamon water. Many other medicines of the ſame kind may be directed in ſuch forms as are found to be moſt acceptable to the patient.

In caſes of exceſſive vomiting opiates are generally given, and often with great advantage. Perhaps no reaſonable objection can be made to the occaſional uſe of opiates, when violent pain or any other urgent ſymptom demands them. But I am fully perſuaded that their habitual or very frequent uſe is prejudicial to the *fœtus*, either by debarring it from a proper ſupply of nouriſhment, or by depraving that with which it is actually ſupplied. The ſame obſervation hath been frequently made on ſpirituous liquors, and probably the effect of both may be explained upon the ſame principle.

Local applications of various kinds have been recommended to abate exceſſive vomiting, and conſent is readily given to their uſe, though without the expectation of great advantage, becauſe no harm is apprehended from them. But a phyſician of great experi-

ence and ſtrict veracity informed me that he had in theſe caſes ſeen the application of a piece of folded cloth moiſtened with *tinctura opii*, to the region of the ſtomach, do much ſervice, when internal medicines of the higheſt eſtimation had proved ineffectual.

It is a general obſervation that the vomiting of pregnant women is moſt frequent and importunate in the morning; and the circumſtance evidently depends on the change of poſition which then takes place, and not the peculiar time. When the poſition is horizontal the patient may not have the leaſt ſenſe of uneaſineſs or diſturbance of the ſtomach, but the moment ſhe riſes from her bed theſe come on, and continue till ſhe again reclines, unleſs ſhe is careful to bring the body erect by riſing ſlowly. Confinement to an horizontal poſition is therefore found both neceſſary and uſeful, not only when the ſtomach is violently diſturbed in conſequence of pregnancy, but from many other cauſes.

When there is a nauſea or inclination to vomit without any evacuation, a gentle emetic is the beſt remedy; and this may be repeated whenever the urgency of the ſymptom requires it, experience having fully proved, that emetics

emetics may be given to pregnant women with perfect ſafety.

SECTION VII.

INDIGESTION, depravity, and loſs of appetite, proceed from the ſame cauſe as the foregoing complaint, of which they are only different modifications; and the treatment commonly enjoined for their relief will be ſuitable for pregnant women. Of that depravity of the appetite, which in pregnancy has uſually gone under the name of *longing*, the inſtances recorded in books, and formerly reported in converſation, are incredible, and too abſurd to deſerve, or, at leaſt, at this time, to require a ſerious refutation. *Longing* was not ſuppoſed to depend upon the fancy or other circumſtances of the mother, but to be a peculiarity in her appetite, produced by the influence of ſome cauſe exiſting in the child. Nor was it ſuppoſed that the effect was confined to the ſimple refuſal or gratification of the appetite, however

however extravagant it was, or however unnatural it might appear; the *longing* of pregnant women was to be indulged, not merely through kindneſs to the parent, but for the intereſt of the *fœtus* alſo. If her wiſhes and inclinations were not gratified ſhe might ſuffer; but the worſt conſequences were to be apprehended on account of the child, which would either be retarded in its progreſs, or bear the mark of the thing longed for on ſome part of its body; as if there was a connexion between the two beings incomprehenſible by us, and infinitely more exalted than is obſerved under any other circumſtances. Nor was the obſervation of ſimilar accidents in animals, or even in plants, conſidered as a valid argument againſt this extravagant opinion.

In times and countries barely civilized, can we ſuſpect that it was thought neceſſary to adopt and to ſupport the opinion of the power of the imagination, in order to ſecure to pregnant women that tenderneſs of treatment which their ſituation requires? Or does there really exiſt any myſterious conſent between the parent and *fœtus in utero* in the human ſpecies? I believe that the opinion originated in the former cauſe; but that in the courſe of time,

time, and by the habit of thinking and acting in a certain manner, a general conviction did take place, that ſome conſent of an inexplicable and perhaps of a divine nature, not to be defined or illuſtrated, really exiſted. An opinion which might have been uſeful and neceſſary at the time when it was firſt eſtabliſhed, continued when there was no longer occaſion for it, and became a ſource of real diſadvantage. For the minds of women are frequently diſturbed, and themſelves rendered miſerable, by the dread of an effect, the cauſe of which was wholly imaginary; ſometimes alſo ſiniſter purpoſes were intended to be anſwered by the pretence. It then became neceſſary to examine the opinion, and it was proved to be groundleſs. In the early part of my own life nothing was more common than to hear an inundation of examples of the dreadful events which were cauſed by diſappointed *longing*; or to ſee inſtances of the great confuſion and diſtreſs in families, from a perſuaſion of its importance. But at the preſent time, and in this country, the term *longing* is ſeldom mentioned, except among the loweſt claſs of people; though the cauſe, if any had exiſted, muſt have produced its effect

effect at all times and in all ſituations. Something is, however, to be granted to *longing*, conſidered as an appetite depending upon the conſtitution, of a certain ſtate of which it may be eſteemed an indication. If we believed the doctrine, that diſeaſes and tendencies to them were produced by an exceſs of acid or alkaleſcent humours, we might readily underſtand why one pregnant woman prefers the moſt ſavoury and high-ſeaſoned food, and another acid fruits and cold water; and why they might both be indulged, not only without prejudice, but with advantage, as has been frequently obſerved in the delirium of fevers from a ſimilar cauſe. The appetite, unſophiſticated by bad habits, will probably never miſlead us as to the quality of our food. It may rather be eſteemed a guide implanted in us by nature, which we ſhall never err in following with diſcretion.

SECTION

SECTION VIII.

THE heart-burn is a painful ſenſe of heat in the throat and *fauces*, with ſudden gurgitations of thin ſaliva in the mouth. In ſome caſes it ſeems to be a mere ſenſation ariſing from the conſent between the ſtomach and *uterus*; and in others to be cauſed by an accumulation of ſharp humours ſecreted in the ſtomach by its wrong action. There is often reaſon to think that it is occaſioned by food which is ſalt and high-ſeaſoned, or otherwiſe hard of digeſtion, and by fermented liquors; and perhaps by ſleeping in an erect poſition after a full meal. The medicines uſually directed for this complaint are given with the intention of abating or removing the ſenſation, of altering the properties of the fluid collected in the ſtomach, or of evacuating them. Theſe generally conſiſt of the various kinds of abſorbent earth, as the teſtaceous powders, or magneſia alone, or mixed with rhubarb; or lime-water, or ſmall doſes of ſaline medicines, of which perhaps the beſt is the *aqua kali*, to the quantity of twenty

twenty drops in a large glaſs of cold water. When the complaint is violent, a gentle emetic is the moſt effectual remedy; and, ſhould the diſpoſition to it originate in the debility of the powers of digeſtion, ſuch means are to be uſed, and ſuch medicines given, as promiſe to reſtore and invigorate them.

SECTION IX.

COSTIVENESS is another troubleſome complaint to which pregnant women are liable. It is often hurtful in its preſent effects, and ſometimes in its conſequences, being not uncommonly the cauſe of head-ach, fever, teneſmus, pain in the bowels, and abortion. Care muſt therefore be taken to obviate coſtiveneſs by the conſtant or occaſional uſe of manna, magneſia, ſenna, electuary of ſenna or of caſſia, *oleum ricini*, ſoluble tartar, Jeſſop's-well water, and the like medicines. But I was formerly much more aſſiduous in preventing coſtiveneſs than I am at the preſent

time, having obſerved that all women who go on properly, in the early part of pregnancy, are liable to this ſtate of the bowels, which may have ſome relation to the ſtrong action of the *uterus* at that time.

The more gentle the means uſed the more eligible they are, provided they anſwer the intention. Aloetic medicines are forbid during pregnancy, leſt they ſhould do miſchief by their ſuppoſed deobſtruent qualities: but they are in common uſe among the lower claſs of people, becauſe they are cheap, and conveniently given in the form of pills; and I have not obſerved any bad effects from them. The ſtomach of pregnant women is often in ſuch a ſtate that no internal medicines can be retained, and we are obliged to have recourſe to clyſters, which are generally efficacious, and always ſafe. It is remarkable that ſmall doſes of the *ſal catharticus amarus*, diſſolved in plain or ſimple mint-water, or in common emulſion, will often be kept upon the ſtomach, when things leſs obnoxious to the taſte are immediately rejected.

SECTION

SECTION X.

By long-continued coſtiveneſs the *fæces* are ſometimes collected in ſo large a quantity, and, by long confinement in the *rectum* and lower part of the *colon*, become indurated to ſuch a degree, that they cannot be voided by the common action of the inteſtines; and the medicines uſually given, and the means uſed to procure ſtools, prove inſufficient for the purpoſe. This complaint is not peculiar to women when pregnant, being found to occur indiſcriminately in either ſex, if compelled by diſeaſe or accidents to remain for a long time in an horizontal poſition; and it is not unfrequent in children, or even in animals. It has often been mentioned by medical writers, though no proper name has been given to it. Among the vulgar it is called the *ball-ſtool*.

There is reaſon to believe that this complaint has often been overlooked in practice; for, though the column of indurated *fæces* is enormous,

enormous, a ſmall quantity in a liquid ſtate, eſcaping by the ſide of the inteſtine, may be diſcharged; ſo that no ſuſpicion of the real nature of the caſe may be entertained, unleſs the patient be examined *per anum*.

When it has continued for a certain time, and the common efforts of the inteſtines, though repeatedly excited, are not equal to the expulſion of the *fæces*, their extraordinary action is raiſed, which is attended with pain, periodical in its returns, and violent in its degree. This action continues till the difficulty is overcome, or, by the effect of the long and fruitleſs action, the parts adjoining to the *anus*, and perhaps the internal parts, become inflamed; and, if proper and timely means are not uſed to prevent the miſchief, ſphacelated.

Purgative medicines rather increaſe this complaint, by ſoliciting a greater quantity of *fæces* into the lower part of the inteſtinal canal, when they cannot be diſcharged. Suppoſitories and clyſters, at leaſt in the way in which they are commonly adminiſtered, cannot be received on account of the greatneſs of the obſtruction, to the removal of which they are not equal. Effectual relief is only to be obtained by dividing the indurated *fæces*

into ſmaller pieces, by manual aſſiſtance, or by ſome convenient inſtrument conducted into the *anus*, and uſed with circumſpection, and then by waſhing them away with repeated clyſters. In women there is leſs difficulty in the management of theſe caſes, becauſe the column of *fæces* may not only be ſeparated by the finger paſſed into the *vagina*, but their excluſion very much aſſiſted.

SECTION XI.

PERHAPS women are by conſtitution, and by the ſedentary lives they lead, more ſubject to the hemorrhoids than men. They are generally eſteemed as indications of too great fulneſs of the habit, or as critical depoſitions upon thoſe parts, of ſomething noxious to the conſtitution: they are alſo an ordinary conſequence of long-continued coſtiveneſs, and, during pregnancy, they may be cauſed or increaſed by the derivation of a greater quantity of blood to the parts, or by the preſſure made upon the veſſels by the enlarged *uterus*.

When

When this complaint is in a moderate degree the patient is ſoon relieved by gentle purgative and diuretic medicines; and thoſe compoſed of ſulphur are, in this caſe, uſually preferred; though ſome phyſicians have ſuſpected their propriety. Cooling applications are alſo adviſed, and of theſe the beſt is a weak ſolution of the *ceruſſa acetata* frequently renewed. Should the patient be feveriſh, or the hemorrhoids much tumefied and painful, bleeding, in quantities ſuited to the conſtitution and the exigence of the caſe, is neceſſary; or one or more leeches may be applied to thoſe which are moſt prominent, if they do not diſcharge ſpontaneouſly. Emollient fomentations and cataplaſms are ſometimes proper. In general unctuous applications do not agree; but ointment of elder-flowers, mixed with an equal quantity of brown ſugar, or a ſmall quantity of ſome lixivial ſalt, is thought, in ſome caſes, to have done much ſervice. In ſome caſes, when the hemorrhoids are very numerous and tumefied even to ſtrangulation, immediate relief may be obtained by firm and gentle preſſure, between the finger and thumb, of each diſtinct hemorrhoid, till they are all compreſſed and reducible within the *anus*.

SECTION XII.

The ſkin of women with child is often diſcoloured in ſpots or blotches, eſpecially about the neck and face. It may be diſagreeable to thoſe who are ſolicitous about ſuch matters; but it is not otherwiſe important. Women have ſometimes alſo a true jaundice; and, whether we attempt to remove the obſtruction to the due ſecretion of the bile, by emetics or purgatives, or deobſtruents, as they are called, there appears to be no reaſon why pregnant women ſhould not bear their operation when they are neceſſary. Men of diſcretion will readily ſee the impropriety of giving a medicine, the operation of which might be more dangerous than the diſeaſe which it is intended to cure; and the neceſſity of accommodating its quantity to the ſtate of the patient, as well as its quality to the diſeaſe.

SECTION XIII.

WOMEN with child are chiefly ſubject to thoſe complaints of the inteſtines which may be ſuppoſed to ariſe from their inert action; but they are ſometimes liable to thoſe which are occaſioned by too much irritability. But the latter are far leſs frequent than the former, though a teneſmus, a diarrhœa, or dyſenteric complaints, may happen at any period of utero-geſtation.

When theſe affections of the bowels are of ſufficient conſequence to require medical attendance, the common mode of treatment is equally efficacious and conſiſtent with the ſafety of a pregnant woman as under any other circumſtances. When there is a feveriſh diſpoſition bleeding is proper; and when there are ſigns of diſturbance in the ſtomach, from offenſive humours, or preceding crapulous complaints, gentle emetics may be given, and the repetitions may be unlimited, if neceſſary. If there be much pain in the bowels, or frequent efforts to go to ſtool, with

little or inſufficient evacuations, purgative medicines, of which perhaps the beſt is the *ſal catharticus amarus* alone, or joined with rhubarb, ought to be given, and occaſionally repeated, according to the continuance of the pain in any ſtage of the diſeaſe. Should the complaint remain after the evacuations, opiates are proper, mixed with ſome mild aſtringent medicines, as the *mixtura cretacea* with *tinctura cinnamoni*. In ſome caſes *ipecacuanha* in ſmall doſes not exceeding a grain, or even half a grain, mixed with ſome abſorbent powder or two or three grains of *rhubarb*, and given every ſix hours, anſwers the purpoſe of quieting the diſturbance of the bowels, without procuring any evacuation. The uſe of opiates is in many of theſe caſes indiſpenſable. Clyſters, compoſed of a decoction of linſeed, or of flower and water boiled to the conſiſtence of thin ſtarch, or of mutton broth, are both comfortable and uſeful; and to any of theſe a few drops of the *tinctura opii* may be occaſionally added.

A teneſmus, or diarrhœa, is a common attendant on abortions, of which they are juſtly eſteemed to be ſometimes the cauſe. In theſe caſes it appears that the exiſtence of the irritation

tation in the *rectum* is unfavourable to the proper action of the *uterus*, and may directly, or by conſent, become the cauſe of abortion. Emetics, by relieving the preſent inconvenience, and by changing the ſeat of the irritation, will often prevent any ill conſequences, but the greateſt reliance is in ſuch caſes to be placed in *opium*, in any of the uſual forms, eſpecially in clyſters.

SECTION XIV.

THE ſtrangury, which is a frequent inclination to void the urine, and a painful diſcharge of it in ſmall quantities, is not an unuſual complaint in pregnancy, in the early periods of which it ſeems to be occaſioned by the conſent between the *uterus* and bladder; but, towards the concluſion, by the mere preſſure of the enlarged *uterus*. It is ſometimes cauſed alſo by the reſtraint which women impoſe upon themſelves, from motives of delicacy, when they are engaged in company. Under any of theſe circumſtances

it may terminate in a ſuppreſſion of urine, which, when the *uterus* is of a certain ſize, that is, about the third month of pregnancy, becomes the cauſe of its retroverſion.

For the relief of the ſtrangury, it is in ſome caſes neceſſary to bleed, and in all to procure ſtools by clyſters, or very gentle aperient medicines. A ſmall quantity of oil of almonds, with manna in the common emulſion, and the addition of a few grains of nitre, is a commodious and often an effectual remedy. The common emulſion with the *ſpiritus ætheris nitroſi*, or barley-water with gum arabic, may be drank at pleaſure; opiates are alſo ſometimes neceſſary. In a ſuppreſſion of urine the catheter muſt be introduced; and of the retroverſion of the *uterus* we have already ſpoken very fully.

At the latter part of utero-geſtation it is not uncommon for women to have an incontinence of urine, not perpetually but occaſionally, when they ſtand upright, or have any ſudden though ſlight motion, eſpecially if they have a troubleſome cough. As far as either the ſtrangury or incontinence of urine depend upon the preſſure of the enlarged *uterus*, it will only be in our power to alleviate

viate them, for the cauſe muſt remain till the time of delivery; and the peculiarity of the complaints may be owing to the compreſſion being caſually made either upon the neck or *fundus* of the bladder. It is ſome comfort to women to be informed, and I believe the obſervation is generally true, that affections of this kind are never produced, except in thoſe caſes in which the preſentation of the child is natural.

SECTION XV.

THE *fluor albus* was before mentioned as a complaint to which women were at all times liable; but in pregnancy the diſcharge is ſometimes exceedingly profuſe, and has very much the appearance, as if it was cauſed by, or accompanied with, inflammation. It may then be occaſioned by ſome extraordinary fulneſs of the parts adjoining to the *uterus*, or by more than uſual irritation. It does not appear that any bad conſequences, either to the mother or child, follow this complaint, or

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that it requires any peculiar treatment. Perhaps, by the relaxation of thoſe parts which are to be dilated at the time of parturition, they may then make leſs reſiſtance; at leaſt it is commonly obſerved that women who ſuffer much from this ſymptom during pregnancy have eaſy labours.

SECTION XVI.

No complaint happens more frequently to pregnant women than pain in the hips, with numbneſs of the inferior extremities. This ſeems to be occaſioned by the untoward preſſure made by the enlarged *uterus* upon the iſchiatic nerves, and thoſe which paſs through the perforations on the anterior part of the *ſacrum*. As it is found to be increaſed in certain poſitions of the body, eſpecially when the patient is accuſtomed to ſleep on one ſide, a change of the poſition generally affords temporary relief. At all events it is not in itſelf of ſufficient importance to require any medi-

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cal aſſiſtance, and is entirely removed ſoon after delivery. Erratic pains in various parts, eſpecially about the face, ears, and teeth, ſo often occur in pregnancy, as to be thought certain indications of that ſtate. They are evidently occaſioned by uterine irritation; and, although they will ſometimes be eaſed by *æther*, by ſolutions of *opium*, or other ſuch local applications, or by bliſters applied behind the ears, yet theſe commonly afford only temporary relief, and in ſome inſtances they aggravate the pain. The ſame obſervation may be made of the cramp, whatever part of the body it may affect. This is a very pertinacious ſymptom, and exceedingly troubleſome, eſpecially in the night; but, being void of danger, has too little attention paid to it. Any real benefit is to be obtained in either of theſe caſes by bleeding, and the uſe of ſuch means as abate irritation in general, or that of the *uterus* in particular.

SECTION XVII.

THE veins of the legs, thighs, and abdomen, frequently become varicous in the latter part of pregnancy, to ſuch a degree, in ſome inſtances, as to exhibit a ſtrangely tortuous, and a very alarming appearance. *Varices*, which are both elongations and enlargements of the veins, may be reaſonably ſuppoſed to proceed from the preſſure of the *uterus* preventing the reflux of the blood by the veins; and perhaps they may often be eſteemed as conſequences of the general fulneſs of the habit. They are uſually accompanied with the cramp; but which of theſe is the cauſe or effect has been much diſputed. No detriment has been obſerved to follow this complaint; but if any thing is required to be done, it ſhould be with the intention of emptying the vaſcular ſyſtem, as moderate bleeding, gentle purging, and a ſpare diet. In ſome caſes it may be judged neceſſary to give ſupport, by moderately tight bandage, to the veins of any part which are particularly diſtended.

SECTION XVIII.

INQUIETUDE and want of ſleep are very troubleſome complaints towards the concluſion of pregnancy. They are alſo frequently attended with ſlight pains in the region of the *uterus*, and other feveriſh ſymptoms. Theſe are moſt grievous in the night, the patient being reſtleſs, in ſpite of a ſtrong diſpoſition to ſleep, and obliged to riſe frequently, and expoſe herſelf to the influence of the cool air; yet, I know not for what reaſon, after a ſhort repoſe at the dawn of day ſhe appears as much refreſhed as after the moſt quiet night.

Perhaps the confinement of the air of the room, and the heat of the bed, may be the immediate cauſes of theſe complaints; but I have generally conſidered them as ariſing from the conſtant and ſtrenuous demands for nouriſhment made by the child upon the conſtitution of the parent: for it is remarkable that thoſe women who ſuffer moſt on this account, though reduced in appearance, bring forth luſty children, and have eaſy labours. But

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if the mother has little uneaſineſs, and grows corpulent during pregnancy, the child is generally ſmall; and, if the child ſhould die before the time of parturition, the inquietude entirely ceaſes. In the firſt caſe the abſorbing powers of the child ſeem too ſtrong for the parent; but in the latter the retaining powers of the parent are ſtronger than the abſorbing ones of the child; ſo that on the whole it appears natural that women ſhould become thinner when they are pregnant.

Nothing affords more effectual relief to patients troubled with this inquietude than bleeding in ſmall quantities, with the occaſional uſe of cooling and laxative medicines. *Hoffman*'s anodyne liquor, to the quantity of forty drops, given in ſome common emulſion every night at bed-time, has been uſeful. Preparations from *opium* have little effect, unleſs they are given in large quantities and often repeated; but a perſuaſion that theſe are ultimately injurious to the *fœtus*, or to the parent, has long deterred me from uſing them. A glaſs of cold water drank at bed-time is not a contemptible remedy; or a towel dipped in cold water and wrapped round the hand, with

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one corner hanging over the edge of the bed, has many times been ſerviceable in procuring ſleep, by leſſening the general heat of the body.

SECTION XIX.

VERY few women, even thoſe who are on other occaſions patient and reſolute, paſs through the time of utero-geſtation without uſing expreſſions which indicate ſome degree of apprehenſion for their ſafety. This ſolicitude may proceed from the mere dread of what they expect to ſuffer at the time of labour; or from reports inadvertently made of untoward accidents which have happened to ſome of their friends or acquaintance, who were under the ſame predicament with themſelves.

It is ſufficient, in the firſt inſtance, to contrive amuſements for them, or to inſpire them with confidence, by pointing out the fortunate event of the generality of theſe caſes, and to impreſs them with favourable ſenti-

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ments of the ſkill of the perſon who is appointed to attend them. Sometimes, however, this apprehenſion of danger ariſes from another ſource, and is cauſed by uneaſy ſenſations which they feel, but cannot well deſcribe. Then it is really a ſymptom of diſeaſe, and may be ranked with the terror which attends the commencement of ſome dangerous diſeaſes, of which it is one of the worſt indications. Inſtead of conſidering it as an hyſteric affection not worthy of regard, we ſhall find, on inquiry, that the patient has ſome degree of fever; as increaſed heat, a white tongue and a quick pulſe, and frequently a fixed pain in ſome part of the *abdomen*; or peripneumonic ſymptoms; or ſome marks of general diſturbance in the habit, though not in a degree ſufficient to denote any particular diſeaſe. By bleeding in ſmall quantities, by cooling and diaphoretic medicines, by repoſe and a well-regulated diet, both the ſenſation and the apprehenſion may be removed before the time of delivery, and a happy recovery from childbed enſured. If the complaint is not properly conſidered, but ſlighted or ridiculed merely as lowneſs of ſpirits, the event may prove unfavourable;

and

and on the recollection of the circumstances there may be room to lament that it was misconstrued or disregarded.

SECTION XX.

The functions of the brain are often disturbed in the time of pregnancy, by which head-achs, drowsiness, and vertiginous complaints, are occasioned; and sometimes pregnant women have a true *hemiplegia*, as well as many other nervous symptoms. These have usually been ascribed to a fulness of blood in the vessels of the brain, caused by an obstruction to its descent to the inferior extremities, by the compression of the enlarged *uterus*. But these do not more commonly happen to those women who are of full habits of body than to those who are feeble and debilitated; and if this was the cause the effect must be pretty generally produced when women have arrived to a certain time of pregnancy. The palsy is always preceded by such symptoms as indicate an uncommon degree of uterine irritation, on which it is

reaſonable to conſider it may depend; more eſpecially as it is never cured during pregnancy, and ſcarcely ever fails to leave the patient perfectly free ſoon after delivery, as has been proved in a variety of caſes.

The blood of thoſe women who become paralytic whilſt they are pregnant is always found to have the ſame appearance as in the moſt inflammatory diſeaſes; and the other ſymptoms indicate the like diſpoſition. It is not therefore ſurpriſing that heating and ſtimulating medicines are obſerved to increaſe the complaint; or that it ſhould be relieved by bleeding, by gentle purging, by a cooling regimen, and ſuch means as abate uterine irritation; not regarding the palſy as an idiopathic diſeaſe, but as a ſymptom occaſioned by pregnancy.

SECTION XXI.

It was before obſerved that anaſarcous ſwellings of the inferior extremities often occurred in pregnancy, and that thoſe ſometimes

times extended to the groins and ſides of the *abdomen*, and in ſome caſes to the external parts of generation, which become extremely painful, and tumefied to ſuch a degree, that the patient is unable to walk without much inconvenience. They appear to be occaſioned in ſome inſtances by too much, and in others by too little, exerciſe; but more frequently by the preſſure made by the *uterus* upon thoſe lymphatic veſſels which are intended to drain the fluids from the inferior extremities. They have ſometimes been unjuſtly ſuppoſed to indicate ſuch a general hydropic tendency as might deter us from bleeding the patient, even in circumſtances which would otherwiſe demand it.

But in many of thoſe abdominal complaints, which occur in pregnancy, it has been obſerved that the patient was ſenſible of much relief when the legs began to ſwell; ſo that in ſome caſes this ſwelling may be eſteemed as a critical depoſition upon the inferior extremities of ſomething ſuperfluous or injurious to the conſtitution. Of the particular treatment which this complaint may require we have before ſpoken.

SECTION XXII.

THERE have been a few inſtances of women with child who have had a true *aſcites*; and thoſe who have an *aſcites* ſometimes become pregnant. Some caſes are recorded, and many reported, in which the mode of treatment enjoined has been founded on an erroneous opinion of theſe two ſituations; that is, of a dropſy being miſtaken for pregnancy, and pregnancy for a dropſy. The former is not productive of miſchief in any other way than by delaying the uſe of ſuch means as might be conſidered likely to cure the diſeaſe if adminiſtered in its early ſtate. But the conſequences of the ſecond error have been deplorable. For, if any active remedies are uſed on the preſumption of a dropſy, the child will of neceſſity be often deſtroyed, and an abortion or premature labour occaſioned; and when the operation of the *paracenteſis* has been performed, it hath proved fatal both to the mother and child, and diſcredit reflected both upon the operator and profeſſion.

profeſſion. It therefore ſeems neceſſary to eſtabliſh this general rule, that no woman at a time of life, or under circumſtances which, in the moſt diſtant manner, ſubject her to a ſuſpicion of pregnancy, ſhould ever be tapped or otherwiſe treated for a dropſy, till by examination *per vaginam*, or by waiting a due time, we are convinced that ſhe is not pregnant; even though ſhe may have before undergone the operation.

It has been ſaid, but whether upon ſufficient authority I know not, that a dropſy has ſometimes been cured by pregnancy.

SECTION XXIII.

THE manner in which the *abdomen* is diſtended, with the degree of its diſtention at different periods of pregnancy, has already been deſcribed. This generally appears to be uniform, though often on one ſide more than the other; and ſometimes there are partial diſtentions, which are popularly attributed to

the head, elbow, or ſome other limb of the child, originally placed, or accidentally moved, out of the common ſituation. It appears that this opinion cannot poſſibly be true, unleſs we preſume that there is at the ſame time a partial diſtention of the *uterus*, which could ſcarcely happen without ſome important and dangerous conſequences. As this caſe moſt frequently happens when the *abdomen* is enormouſly diſtended, and as it has all the appearance of a ventral *hernia*, it is more probable that it is occaſioned by the ſtarting of ſome of the abdominal muſcles or the partial yielding of the integuments. But the explanation of the caſe is of leſs importance, as it neither requires or admits of any aſſiſtance either before or at the time of labour, and diſappears almoſt immediately after delivery.

From the great diſtention of the *abdomen*, eſpecially in corpulent women, an umbilical *hernia* is very frequently occaſioned, which, depending wholly upon the degree of diſtention, does not admit of any relief before the patient is delivered; when the elaſtic truſs, ſuited to the ſize and form of the *hernia*, is a more eaſy and effectual remedy than any inſtrument

ſtrument of the kind which has hitherto been recommended. This ſeems to be the only kind of *hernia* produced by, or which remains during pregnancy; for, unleſs the other kinds adhere to the *ſac* in which they are contained, temporary relief is afforded by that aſcent of the inteſtines which neceſſarily follows the enlargement of the *uterus*.

SECTION XXIV.

In ſome caſes the whole *abdomen* is diſtended beyond what it is able to bear without inconvenience; the ſkin becomes inflamed, and ſometimes cracks, ſo that there is a little oozing from various parts. The true ſkin alſo cracks when the outſide is not altered, by which there remains upon the integuments of the *abdomen* of women, who have had children, a number of ſmall cicatrices, as if the parts had been ſcarified, or there had been ſlight longitudinal ulcerations.

For the eaſe, both of the diſtention and

conſequent ſoreneſs, ſome unctuous applications ſhould be rubbed over the abdomen every night at bedtime. The ointment commonly recommended for this purpoſe is compoſed of rendered veal fat beat up with a ſmall quantity of roſe water.

By the extreme diſtention of the muſcles of the *abdomen* theſe are often the ſeat of pain during pregnancy, eſpecially at their inſertions; and it requires ſome attention to diſtinguiſh this from the pain which may ariſe from affections of the *ſymphyſis* of the *oſſa pubis*. When the weight of the *abdomen* in pregnant women is very great, and weakly ſupported by the integuments, it becomes pendulous, and occaſions to the patient much pain and difficulty in walking, and many other inconveniencies. It is then of ſervice, by a napkin or broad bandage, ſuited to the purpoſe, paſſed round the lower part and middle of the *abdomen*, to ſupport it with a moderate degree of firmneſs, and then by a ſcapulary to ſling the depending weight over the ſhoulders, by which the patient will be enabled to move and walk about with infinitely leſs trouble.

SECTION

SECTION XXV.

INSTANCES ſometimes occur of pregnant women being affected with the venereal diſeaſe: and we have generally been adviſed to follow a mode of treatment by which the diſeaſe was not intended to be perfectly cured, but moderated and reſtrained from further progreſs; leaving the abſolute cure to be completed when the patient was recovered from the ſtate of childbed. This method of proceeding has been recommended on the preſumption that dangerous conſequences would reſult either to the mother or child, if a quantity of quickſilver was uſed, during pregnancy, ſufficient to root out the diſeaſe effectually from the conſtitution. If the patient has a *gonorrhœa*, there is clearly nothing in the medicines preſcribed, or in the treatment, which can prove hurtful to either at the time of utero-geſtation. But if there ſhould be a confirmed *lues*, as frictions, with *Unguentum Hydrargyri* properly inſtituted and purſued,

purſued, which, as it was one of the firſt, is yet acknowledged to be the moſt efficacious remedy; or if equal or greater confidence is placed in them than in any preparation of quickſilver internally given; it is reaſonable to think, and the opinion is confirmed by experience, that women might at any time of pregnancy go through a courſe of them with perfect ſafety. It is ſcarcely neceſſary to obſerve that medicines compoſed of quickſilver, whether internally given or externally applied, are not at this time uſed with a view to promote a ſalivation or any other profuſe evacuation, but with the intention of filling the habit with that medicine, and retaining it as long as it is thought neceſſary for the extinction of the diſeaſe. The utility and propriety of this practice is allowed by thoſe who differ widely in their explanations of the mode in which quickſilver is ſuppoſed to operate. I may be permitted to obſerve that the principal cauſes of the failure of this medicine to anſwer our purpoſe are, either the hurry with which it is at firſt uſed, or a concluſion often, though erroneouſly, made, that the diſappearance of the ſymptoms is a proof of a perfect cure of the diſeaſe;

whereas

whereas it frequently happens that, if the frictions are not continued many days, or even ſeveral weeks or months after all the ſymptoms are gone, there will in a ſhort time be new appearances, which prove the return or exiſtence of the diſeaſe.

It has been ſuppoſed that a child born of an infected parent could not at the time of birth be exempt from infection, and that the *virus* would be ſo intermixed with its frame that there would ſcarcely be a poſſibility of exterminating it. This is at leaſt a very dubious point; becauſe it has happened to every perſon engaged in practice in a city or large town, to attend patients of this deſcription, who have nevertheleſs brought forth children which were perfectly healthy. I do not recollect one deciſive inſtance of a child born with any ſymptoms of the venereal diſeaſe upon it; and the contrary, I am perſuaded, is often ſuſpected from a knowledge of circumſtances which give riſe to the ſuſpicion excluſive of the ſymptoms; though it muſt be allowed that a child has a chance of receiving the infection in the act of parturition, by abſorbing the *virus* in its paſſage over ulcerated ſurfaces. But, with regard to the

firſt

firſt opinion, it may perhaps be juſtifiable to reaſon in this manner. If the infection is received it muſt be at the time of conception, or afterwards. If the prolific particles, either in the male or female, were mixed with the venereal *virus*, the prolific properties would by ſuch mixture be deſtroyed; but if conception was previous to the infection, there ſeems to be no way in which the latter could be communicated to the child already conceived, all immediate intercourſe being ſecluded by the perfect cloſure of the *os uteri*.

Children brought forth by parents infected with the venereal diſeaſe will often be born dead; but this event may commonly be imputed with more propriety to the ſeverity of the means uſed for the extirpation of the diſeaſe than to the diſeaſe itſelf.

SECTION XXVI.

WHEN pregnant women have the ſmall-pox, there is much difference in the opinions entertained of the poſſibility of the child being

ing infected. Some have contended that, if the mother has this diſeaſe, the child could not eſcape; whilſt others are perſuaded that the child could not, according to the laws of the animal economy, receive this diſeaſe. Caſes are recorded by various writers in confirmation of both the opinions; and many inſtances have been communicated to me by men of integrity and attention, with the view of deciding this point; but the caſes are contradictory to each other, and therefore prevent any preſent deciſion upon the ſubject. When, by the multiplication of well-atteſted facts, our knowledge is extended and corrected, if it ſhould be proved that the variolous infection is generally received by the *fœtus in utero*, if the parent has the diſeaſe when ſhe is pregnant, we may then conſider whether the knowledge of the fact can be turned to any practical advantage.

It is an opinion almoſt univerſally received, that, if a woman with child ſhould have the ſmall-pox, and miſcarry; or, if at the full time her labour ſhould come on during the continuance of the diſeaſe; it would neceſſarily prove fatal to the mother. The event has too often proved the truth of this obſer-

vation; yet it will probably ſtand upon more juſt ground if it is ſtated in this manner. Should the attack of the diſeaſe be violent, and the eruptive fever run very high, patients may and have often eſcaped the danger, at any period of utero-geſtation, though the child were then expelled. But if a woman paſſes the time of the eruptive fever, and labour or a tendency to miſcarry ſhould come on towards the criſis of the diſeaſe, as far as my obſervation enables me to ſpeak, ſhe will then certainly die. She dies, in truth, not becauſe ſhe miſcarries or brings forth a child, but ſhe miſcarries or falls into labour becauſe ſhe is already in a dying or very dangerous ſtate, and by thoſe circumſtances the danger is infinitely increaſed.

When other diſeaſes occur in pregnancy, the treatment to be directed muſt be ſuch as the particular diſeaſe may require, making due allowances for that ſtate, by not preſcribing any violent means, unleſs the immediate ſafety of the patient may render them abſolutely neceſſary. Every morbid alteration of importance which happens during pregnancy ſuperſedes, if we may be allowed the expreſſion, all the changes which depend upon that

that ſtate; and whoever aims to eſtabliſh the character of a ſucceſsful practitioner in midwifery muſt pay attention to the health of his patients when they are pregnant. If there be no diſeaſe, or diſpoſition to it, the proceſs of a labour is generally uniform and ſafe. If any diſpoſition to diſeaſe ſhould exiſt at that time, the labour may be rendered irregular and dangerous, or the immediate cauſe of ſome diſeaſe peculiar to the child-bearing ſtate, not by giving, but by diverting ſuch diſpoſition to ſome part rendered by parturition more ſuſceptible of its influence.

CHAPTER VII.

SECTION I.

It was formerly aſſerted and believed, that the proper ſituation of the child in the *uterus*, in the early months of pregnancy, was ſedentary; with the breech reſting at the ſuperior aperture of the *pelvis*, and the fore-parts of the child turned exactly to the *abdomen* of the mother. At or towards the time of parturition it was thought that the child, partly by the increaſed weight of the head, but chiefly by its own inſtinct and powers, made a revolution, and turned with its head downwards, in ſuch a manner that the *vertex* was placed to the *pubis*, and the face to the *ſacrum*. In this poſition it was ſuppoſed to paſs through the *pelvis*. This change was called preſenting to the birth, of which it was judged to be the ſignal; and, from the terms uſed in different languages to expreſs the change, the opinion ſeems to have been univerſal. By the

the examination of women who have died at different periods of utero-geſtation, or in the act of child-birth, it is now aſcertained that ſuch as is the ſituation of the child in the early part of pregnancy, ſuch it will be at the time of labour, unleſs the poſition be altered by ſome accidental violence. Perhaps this opinion of the ancients was not founded on obſervation, but on the preſumption that fatal conſequences would reſult from the continuance of the *fœtus* with its head downwards for nine months. They did not know that there was a circulation of the blood, and of courſe were ignorant that particular veſſels exiſted in the body, eſpecially calculated, by preſerving a communication between different parts, to prevent any injury to the *fœtus*, either from its confinement or poſition.

The natural ſituation of the *fœtus* in the *uterus* is ſuch as to occupy the leaſt poſſible ſpace, ſo that the leaſt poſſible inconvenience is occaſioned to the parent, yet with the utmoſt eaſe to its own body and limbs *. In the poſitions which are eſteemed natural there is an

* Quaſi in ſeipſum totus conglobatus.—*Fabric. ab Aquapendente.*

endleſs variety; but they are moſt commonly after this manner*: the knees are drawn up to the belly, the legs are reflected backwards, the feet croſſed, and lying cloſe to the breech; the elbows are in contact with its ſides, and the hands turned up to its head, one of which is often placed upon the cheek or ear. The ſpine is incurvated, and the neck being bowed, the chin reſts upon its knees. There is that inflexion of the body into which we ſpontaneouſly fall when we ſeek repoſe; and, as it is our poſition before we are born, it is that alſo to which we have an inclination in the decrepitude of old age.

The ſituation of a child, preſenting naturally, is with the head downwards, reſting upon the *pubis*, with one ſide of the head towards the *abdomen* of the mother, and the other towards the *ſacrum*, or in a ſmall degree diagonally. The bulk of the body of the child is not placed againſt the ſpine, but

* Adductis ad abdomen genibus, flexis retrorſum cruribus, pedibus decuſſatis, manibuſque ſurſum ad caput ſublatis, quarum alteram, circa tempora vel auriculas, alteram ad genam detinet; ſpina in orbem flectitur, caput ad genua incurvato collo propendet; tali membrorum ſitu, qualem in ſomno per quietem quærimus.—*Harv.* Exercitat de Partu.

on one ſide, generally on the right, and the limbs turned towards the other, ſo that the *abdomen* of a woman with child is, in general, evidently diſtended more on one ſide than the other. When this circumſtance, though a neceſſary conſequence of the proper ſituation of the child is obſerved, a ſuſpicion, wholly groundleſs, is often entertained, that its preſentation at the time of birth will be unnatural. A ſmall degree of permanent enlargement may afterward be perceived on that ſide on which the child has reſted.

SECTION II.

THE term of utero-geſtation is different in every claſs of animals, and the diverſity has been attributed to the nature and properties of the parents or the offspring. Thoſe, who were of opinion that it depended upon the parent, ſought for the reaſon in the ſtructure or conſtitution of the *uterus*, the heat or coldneſs, dryneſs or moiſture of which, according to the doctrines of the old philoſophy, were ſuppoſed to be the cauſes of the varieties:

yet, if the term depended upon theſe, it would then remain to be proved how one form or conſtitution was capable of bearing diſtention longer than the other. Thoſe, who imputed the time of the event to the offspring, aſſigned to them the ſame properties. It ſeems to have been generally believed, that, by the long or ſhort continuance of the *fœtus* in the *uterus*, the future ſize, duration, and qualities, of different animals were influenced; and that theſe were moſt perfect in thoſe animals which had the longeſt period of utero-geſtation. It was alſo thought, and perhaps with truth, that the longer the time of utero-geſtation, the longer the animals were before they came to full growth; and that on this depended their continuance in the mature ſtate, without any natural tendency to decay, one period of exiſtence regulating another. In oviparous animals the time of incubation neceſſary for the production of their young is not altered by the qualities of the bird by which it is incubated, but follows its genuine nature; as in a hen's egg incubated by a duck. This favours the opinion that the term is guided by the offspring, but it is by no means deciſive: for the circumſtances relating

lating to the birth of oviparous and viviparous animals, though they may illuſtrate each other, cannot, with any intelligence, be compared, after the egg is expelled.

If the time of utero-geſtation be not interrupted by accidental cauſes, it proceeds in all animals with great, though not with perfect regularity, as is proved by thoſe who are employed in breeding cattle, by whom a correct account is uſually preſerved. But in the human ſpecies there was ſuppoſed to be a conſiderable latitude in this reſpect, and examples have been recorded with great confidence, by grave writers, of children born after a term much exceeding the common, and of others after a term far ſhort of it, which were nevertheleſs in a perfect ſtate. This opinion hath alſo been countenanced to a certain degree by the laws or cuſtoms eſtabliſhed in different countries *.

The common time of utero-geſtation in women is forty weeks, or nine calendar months; and ſome men of ability and can-

* Spigelius Ulpianum juris conſultum immerito reprehendit, quod poſt decimum menſem editum neminem, ad legitimam hæreditatem admiſcrit.—*Harv.* Exercitat. de Partu.

dour have been perſuaded that it is poſſible for them to proceed as far as ten calendar months. By the laws of this country the term is not preciſely limited; ſo that if any caſe ſhould occur in which this matter might be litigated, the deciſion would rather depend upon the circumſtances, or upon the confidence placed in the teſtimonies of the medical witneſſes, than upon any proof or conviction of the nature of the thing to be decided.

There muſt in general be much difficulty in determining with abſolute preciſion the time of utero-geſtation in individual women. But I have met with ſeveral inſtances of thoſe who, from particular contingencies, ſuch as the caſual intercourſe with their huſbands, or their return to, or abſence from them, for a particular time, have been able to tell exactly when they became pregnant; and none of theſe have exceeded forty weeks. I am therefore perſuaded that the term of utero-geſtation is as accurately limited in women as in animals. I do not mean that it is completed to a minute or an hour, becauſe the birth of the child may be delayed by a multiplicity of accidents. But parturition will be accompliſhed, or the parturient diſpoſition will take place, at the expiration

expiration of forty weeks from the time of conception. Nor does it ſeem reaſonable that a law of nature, which is not altered by the differences of age, by the diet, by the extremes of climates, by the ſeverities of ſlavery, or the indulgencies of luxury, ſhould be changed by circumſtances of leſs importance.

But the examples of women who have brought forth their children before the full time of pregnancy are innumerable. As there is no mark in the external appearance, or internal conformation, which enables us to determine with preciſion whether a child has remained in the *uterus* its full time, this muſt continue doubtful, except as far as we are able to judge by the general probability, or by the ſize of the child. So many accidents occur which may give to the *uterus* its diſpoſition to expel the child, that its premature expulſion can never be the occaſion of ſurpriſe.

Though it ſhould be allowed that the natural term of pregnancy in women is forty weeks, there will be ſome difficulty in making the calculation. The diſappearance of the *menſes* is uſually the firſt change which occaſions a ſuſpicion of pregnancy; and might

therefore be eſteemed the era from which we are to date its commencement. But, though women are more apt to conceive ſoon after than juſt before menſtruation, they may become pregnant at any part of the time between the two periods, when they did, and when they were expected to menſtruate. In order to avoid any great error it is cuſtomary therefore to take the middle time, and to reckon forty-two weeks from the laſt act of menſtruation, by which method, if we are rightly inſtructed, we may avoid any egregious miſtake.

Women who give ſuck, and who do not menſtruate, ſometimes become pregnant, and have no alteration by which they can make any reckoning of the time of their delivery, and all is left to conjecture. But there is uſually, in theſe caſes, a ſhort and imperfect menſtruation which denotes the time when the *uterus* was in a ſtate fitted for conception. Some women alſo have conceived who never did menſtruate, or in whom menſtruation had been interrupted for many months. We can then only judge of the time when they conceived by ſuch ſymptoms and appearances as ſhewed that they had acquired the diſpoſition

to menſtruate, and would have menſtruated if they had not conceived.

Some inconveniencies are produced by attempts to make exact reckonings for pregnant women; for, when the time fixed for their delivery is paſt, the miſtake creates much ſolicitude and impatience. When therefore it is neceſſary to give an opinion on this ſubject it is better to mention ſome time beyond that which we really ſuppoſe; or, on the whole, it would perhaps be better that labour ſhould always come on unexpectedly.

SECTION III.

At the expiration of forty weeks the proceſs of labour commenceth; and various opinions have been given with a view of explaining its cauſes. Of theſe opinions, which have been ſuppoſed to conſtitute a very important part of obſtetric knowledge, we ſhould not be ignorant, as it appears that the practice

tice of midwifery has really been very much influenced by them.

It was ſaid by all the ancient writers, that a child was born by its own efforts, which it was incited to make by the neceſſity it felt of breathing cool air, for the purpoſe of moderating that heat which was generated by its long confinement in the *uterus*; or by the want of nouriſhment, the ſources of which failed, or became depraved; or by the acrimony of the *meconium* and humours of its own body. By ſome the cauſe aſſigned for the exertions of the *fœtus* was the want of room for its further growth and enlargement; and that by its efforts it eſcaped out of the *uterus* as out of a priſon in which it had been conſtrained. By others it was preſumed that there was ſome analogy between the ripeneſs and falling of fruit and the perfection and birth of a child. The peculiar cauſe was unimportant, but, from a general perſuaſion of the principle, it was preſumed that the eaſe or difficulty with which labours were completed depended upon the ſtrength or activity of the child. Another concluſion certainly followed: when the child was feeble the labour muſt neceſſarily be ſlow; and in caſes

of

of unuſual difficulty we might be aſſured that the child was dead, or could not poſſibly be ſaved. Of courſe, whenever the aſſiſtance of art was required there was no occaſion to regard the child, the exiſtence of the difficulty proving the death or impoſſibility of preſerving the child. If we had no other circumſtance by which the practice of the ancients could be compared with that of the moderns, this alone would decide in favour of the latter. Many expreſſions are, however, in uſe at the preſent time which are founded on this opinion of the ancients; and it is not clear that practice is not, in ſome inſtances, yet influenced by it.

No fact is more inconteſtably proved than that a dead child, even though it may have become putrid, is commonly born after a labour as regular and natural in every part of the proceſs as a living one; and that children, after labours accompliſhed with the moſt extreme difficulty, will often be born not only living but in perfect health. There muſt then be ſome other principle of birth beſides the efforts of the child, which in fact appears to be wholly paſſive.

It was by later writers ſuppoſed that the child

child was expelled by the action of the *uterus*, aided by that of the diaphragm and abdominal muscles. This doctrine, which I believe was first advanced by *Fabricius ab Aquapendente* *, is the basis of all the modern improvements in the practice of midwifery; and it is so indisputably proved, by the occurrences both in natural and difficult labours, that its truth is now almost universally admitted.

Ingenious men were not satisfied with the observation of the fact, but they endeavoured to discover the principle of the action of the *uterus*, and to assign reasons for its coming on at a particular time. It was surmised that this expulsatory action of the *uterus* depended upon its form or structure, or its inability to bear further distention; or upon its heat or coldness, dryness or moisture; or upon the distinction of its muscular fibres, which were said to be arranged in a peculiar direction; or to the effort to menstruate when the vessels of the *uterus* were incapable of containing a greater quantity of blood than was already collected in them. Of these and many other

* Simul expultrix uteri facultas extemplo insurgit, et excitatur.—See *Cap.* lxxxvi.

opinions

opinions it would be uſeleſs to debate; but, as all viviparous animals bring forth their young at regularly ſtated times, and by proceſſes generally alike, it would not be judging according to any philoſophical rule to attribute as a cauſe of parturition, or of parturition at any certain time, a circumſtance peculiar to any individual claſs of animals.

The opinions of men upon the ſame ſubject are often in direct oppoſition to each other: and ſome, fearful that truth is not to be found in either extreme, have ſteered a middle courſe between the doctrine of the ancients and moderns. Theſe have ſuppoſed that childbirth is not completed ſolely by the efforts of the child, or by thoſe of the parent, but by the conjunction of their efforts. Of this opinion, which participates of the error of the ancients, there have been few ſupporters; and the arguments in its favour have been drawn from obſervations made in the firſt inſtance on vegetables and oviparous animals. How far the diſcovery of the particular cauſe of the birth of a child might lead to the improvement of practice it is impoſſible to determine. The knowledge of the fact, that children are expelled, has evidently been productive of much

much advantage; but the attempts to inveſtigate the cauſe do not give us more ſatisfaction than old *Avicenna*, who, with great humility and devotion, ſays, "At the appointed time labour comes on by the command of God."

SECTION IV.

It was before obſerved, that pregnancy and parturition have uſually been mentioned as diſtinct operations of the conſtitution. But it ſeems better to conſider every change in the animal economy, from the time of conception to the birth of the child, as forming a ſingle proceſs, conſiſting of ſeveral parts, each perfect in itſelf, and at the ſame time a cauſe of ſome ſubſequent change, neceſſary for the completion of the whole; and, though there is no preciſe line to the different parts of this proceſs, they readily admit of diſtinctions, by which they are more eaſily comprehended and more expeditiouſly deſcribed. Thus, previous

previous to the act of parturition, many changes take place in the conſtitution which indicate its approach; and theſe have been called the pre-diſpoſing ſigns of labour. The time of their appearance is different, being in ſome women ſeveral weeks, and in others only a few days, before the commencement of labour: but they univerſally take place, unleſs the labour be precipitated by ſome accidental influence: and the more perfectly theſe changes are made, and the longer the time of their preceding the labour, the more natural and kindly will the proceſs generally be.

There is, firſt, a gradual ſubſidence of the *fundus* of the *uterus*, and whole *abdomen*, ſo that women often appear, and really are, leſs in the ninth than in the eighth month of pregnancy. This is a good indication, becauſe it ſhews that the *fundus* and all the other parts of the *uterus* are diſpoſed to act; and on the equality of this diſpoſition the efficacy of its action will very much depend. When there is none, or but little, ſubſidence of the *abdomen*, and the patient complains, even in the time of labour, that the child is very high, it is always unfavourable; being a proof

proof that the *fundus* of the *uterus* is in an inactive ſtate, or acting improperly.

There is, ſecondly, a diſcharge of *mucus* from the *vagina*, which in the beginning is of the kind often obſerved in the *fluor albus*; that is, a mere augmentation of the ſecretion from the glands of the *vagina* and neighbouring parts; but, by a gradual alteration in ſome inſtances it becomes extremely viſcid and tenacious. This is very remarkable in ſome animals whoſe bodies are expoſed to view; and it is a ſign that the parts concerned in parturition are in a ſtate diſpoſed to dilate, which diſpoſition is improved by the diſcharge.

Thirdly, In early pregnancy the external parts of generation are in a natural ſtate, or rather more contracted than uſual: but when the time of labour approaches there is a gradual enlargement and relaxation of them, with ſome degree of protruſion. This change is alſo to be obſerved in animals only; but, from their complaints, and the repreſentation of their feelings towards the concluſion of pregnancy, there is every reaſon to believe that a ſimilar change takes place in women.

Fourthly, It was obſerved that the breaſts very readily and generally ſympathize with the

the *uterus* in all its affections, and particularly that they are enlarged immediately after conception. There is alſo a gradual change in them from that time to the approach of labour, when they are perfectly fitted for the ſecretion of milk; which, when ſecreted in a more mature ſtate, or in an increaſed quantity, may be eſteemed a ſign that the time of labour is drawing near. In a few inſtances animals have continued to give ſuck during pregnancy, without any apparent alteration in their milk, till they approached the time of parturition, when it was found to be much changed in its conſiſtence, colour, and properties, a new mode of ſecretion being evidently eſtabliſhed.

Fifthly, by the inſertion and diſpoſition of the ſacro-ſciatic ligaments the principal firmneſs is given to the connexion of the bones of the *pelvis*. In animals not with young theſe ligaments are very ſtrong and rigid, and make a reſiſtance to any external preſſure almoſt as firmly as if they were oſſified. But when the time of parturition is at hand their ſtrength and rigidity gradually decline, and they ſcarcely make greater oppoſition than a duplicature of the ſkin. In conſequence of

this relaxation of the ligaments, animals change their manner of walking, by projecting the weight of the body on each ſide alternately, rather than by advancing the feet. There is ſuch an appearance as juſtifies the uſe of the popular expreſſion; for they literally ſeem *falling in pieces*. In women theſe changes cannot be ſo well obſerved; but there are many reaſons to be drawn from their manner of walking, and from their repreſentations, which would induce us to believe that ſimilar ones take place in them as well as in animals *.

Sixthly, All animals, wild or domeſticated, aſſiduouſly endeavour to provide a ſafe and comfortable habitation for their young, when the time of bringing them forth draws near †. The actions of mankind are always attributed to, and uſually proceed from, more dignified and commendable principles than thoſe of

* Sacri et pectinis oſſium cum coxendice copula, quæ fit per ſynchondroſin, adeo emollitur et ſolvitur, ut dicta oſſa facile exeunti fœtui cedant et hiantia regionem totam hypogaſtricam ampliorem reddant.—*Harv.* Exercitat. de Partu.

† Accedente pariendi tempeſtate ad ſolita loca revertantur: ut ſtabula vel nidos ſuos tuto extruant, ubi fœtus pariant foveant, alantque.—*Harv.* Exercitat. de Partu.

animals.

animals. But in many natural actions, which are too powerful to be controlled, or not without great difficulty, by inſtructions, manners or cuſtoms, thoſe may often be obſerved to act inſtinctively; and this is in no caſe more remarkable than in ſuch actions as relate to their children. From inſtinct, therefore, and not reaſon, it may be preſumed that the choſen and favourite employments of pregnant women are thoſe which in ſome way or degree relate to the expected bleſſing; and that an unuſual ſolicitude about the preparation of ſuch things as may be neceſſary or convenient to the child, in the advanced ſtate of pregnancy, may be conſidered as a ſign that the time of labour is approaching.

SECTION V.

Before we proceed to the hiſtory of labours it is neceſſary that we ſhould ſpeak of the operation, if it deſerves the name, by which we are to acquire our information. This is deſcribed by the term examination, or exami-

nation *per vaginam*. When inſtituted at the time of labour it is popularly called *taking a pain*, which explains the opinion entertained of it by women. Concerning this operation two things are to be obſerved; firſt, the manner in which patients are to be examined; and, ſecondly, the information to be gained by the examination.

The poſition in which women are placed when it is thought neceſſary to examine them varies in different countries. In ſome the examination is made when they ſit in a chair or ſtool contrived for the purpoſe; in others when they kneel by the ſide of a bed; and in others in a recumbent poſition. But in this country, at the preſent time, almoſt univerſally, women repoſe on a couch or bed, upon their left ſide, with their knees bent, and drawn towards the *abdomen*; and this is by far the moſt convenient. It is not requiſite, or poſſible, to enumerate every circumſtance to which it is neceſſary to pay attention; but it muſt be an invariable rule, never to propoſe an examination *per vaginam* but as a matter of abſolute neceſſity. It is alſo to be performed with the utmoſt care and tenderneſs, and the ſtricteſt regard to decency; for,

for, unimportant as the operation in itſelf really is, an opinion is formed of the ſkill and humanity of the practitioner, and of the propriety of his conduct, by his manner of doing it.

An examination *per vaginam* may be needful to diſcover and diſtinguiſh diſeaſes of the *uterus* and contiguous parts; to aſcertain whether a woman be pregnant, or how far ſhe is advanced in her pregnancy; to determine whether ſhe be in labour, or what progreſs that has made; if the preſentation of the child be natural; if the *pelvis* be well formed or diſtorted; and on many other occaſions.

The ſtate of the parts examined, under all the incidents before recited, is different from the natural; but of the deviations of every kind, and in every degree, it is impoſſible to form a judgment, unleſs we have previouſly obtained an accurate idea of their natural ſtate. This becomes a ſtandard by which we are to judge of every change, natural or morbid; and the diſcrimination of the various diſeaſes can only be acquired by frequent practice, no abſtract rule being ſufficient for

the purpoſe. It may indeed be ſaid that, in ſome diſeaſes of the *uterus*, eſpecially thoſe diſpoſed to become cancerous, the *os uteri* is indurated, thickened, fiſſured, uncommonly tender when touched, and patulous, or with the *labia* ſomewhat reverted. But in others, as the *polypus*, hydatids, inflammation, or glandular enlargement of the *uterus*, the ſtate of the parts, except the ſimple enlargement of the *uterus*, or the ſenſation they give, cannot be deſcribed by words, without an antecedent agreement what thoſe ſhall be called which we have before felt or ſeen.

As it is extremely difficult, if not impoſſible, to determine, by an examination *per vaginam* in the early part of pregnancy, whether a woman be with child, it is prudent to evade the operation; becauſe it is always expected that we ſhould afterwards ſpeak with preciſion and confidence. The *fundus* of the *uterus* is the part firſt diſtended in conſequence of conception; and the *cervix*, which is the only part we can feel, does not begin to ſhorten in any diſtinguiſhable way before the termination of the fourth month of pregnancy; not to mention the varieties

varieties in the ſtructure and ſize of the parts in different women, and the alterations which may be cauſed by the attachment of the *placenta* to different parts of the *uterus*; or in thoſe diſeaſes which reſemble pregnancy. A cautious practitioner would not, therefore, examine before that time, becauſe he cannot gain information to ſupply him with proper ground on which to form an opinion that will not be extremely ſubject to error. Perhaps this limitation may not be ſufficiently ſtrict; and it is better to ſay, in general terms, that the longer we defer the examination the greater probability there will be that we ſhall not be deceived, or fail to gain the information we want. In all caſes likewiſe of doubtful prognoſtic it is proper to avail ourſelves of every advantage which a knowledge of the collateral circumſtances can afford, before we give our opinion.

Nor is there leſs difficulty when we are aſſured that a woman is with child, in deciding, by an examination *per vaginam*, how far ſhe is advanced in her pregnancy. An opinion of this muſt be formed on the eſtimation we make of that portion of the *cervix uteri*

which we ſuppoſe ſhould remain undiſtended at any individual period of pregnancy. But as the *cervix uteri* naturally varies in its length in different women, of courſe the portion which remains undiſtended at any one time muſt vary; and all that can be ſaid upon the ſubject will only deſerve the name of conjecture. It is therefore more prudent not to hazard an opinion ſingly upon the information gained by an examination *per vaginam* when any determination of importance is to be made; but, as in the former ſtatement reſpecting the exiſtence of pregnancy, to act with caution, and to collect all the information we can get from other circumſtances, before we preſume to give a decided opinion.

When a woman is at or near the full period of utero-geſtation it may be determined whether ſhe is in labour by the ſtate of the *os uteri.* By the dilatation of the *os uteri* during the continuance, and not by its relaxation in the abſence of a pain, we are to judge that the patient is in labour; for a conſiderable degree of relaxation of the *os uteri* is ſometimes found to take place ſeveral days,

days, or even weeks, before the commencement of labour, though it is generally in a contracted ſtate till it is diſtended, in conſequence of the preſſure made by ſome part of the *ovum* urged upon it by the acting *uterus*. By the time which has been required to produce a certain degree of dilatation, we may gueſs with tolerable exactneſs the general duration of a labour, provided the action of the *uterus* ſhould continue with equal energy; becauſe on this, as well as on the ſtate of the parts, the progreſs of a labour muſt depend. But ſo many unexpected circumſtances occur which may accelerate or interrupt a labour in its progreſs, that it is a proof of wiſdom to be ſilent upon this ſubject, at leaſt not to advance our opinions with confidence, but to offer them, when demanded, with heſitation and reſerve.

The manner in which the child preſents may generally be diſcovered by an examination in the beginning of labour; for, though we ſhould not be able to diſtinguiſh any part through the membranes, in the intervals between the pains (when only the attempt for this purpoſe ought to be made), if the head preſents it may

may be perceived through the anterior part of the *cervix uteri*, reſting upon the *oſſa pubis*, in ſome caſes ſo early as the fifth month of pregnancy. When any other part preſents we can in general only diſcover through the membranes that it is not the head, by its ſmallneſs and the want of that reſiſtance which is made by the head, and if we can feel no part preſenting, though it does not certainly follow, we may preſume that it is not the head; and then we ſhall be prepared to give aſſiſtance at the time when the membranes break, if the preſentation ſhould be ſuch as to require it.

After an examination *per vaginam*, our opinion is conſtantly demanded as to the proſpect of an eaſy or difficult labour. If the preſentation of the child be natural, the *pelvis* well formed, the ſoft parts in a relaxed ſtate, and the patient free from diſeaſe, we may ſafely aſſure her friends that all the appearances are promiſing, and that the labour will be finiſhed, in all probability, with perfect ſafety both to the mother and child. But of the ſlowneſs or celerity of a labour great experience and attention can only

only give that maturity of judgment which enables us to form an opinion with tolerable preciſion; yet the ſame experience having often ſhewn the uncertainty of any determination, will point out the propriety of leaning rather to the ſide of doubt than of confidence.

CHAPTER VIII.

SECTION I.

ON LABOUR.

HAVING given a deſcription of all the parts concerned in parturition, and enumerated the principal alterations produced in the conſtitutions of pregnant women, and having farther taken notice of all the previous changes, we come in the next place to the conſideration of a *Labour*. This term is generally uſed to ſignify every act performed with difficulty or pain; but by long eſtabliſhed cuſtom it has been appropriated in this and many other countries, to parturition, the circumſtances of which it is well ſuited to deſcribe.

Before we proceed to the hiſtory of labours, it is requiſite that we ſhould divide them into claſſes or kinds; and, though objections might be made to a very ſtrict arrangement, ſome appears to be both convenient and neceſſary, for

for the purpoſe of enabling us to convey our ſentiments with perſpicuity to others, and for real uſe in practice.

With theſe intentions, labours may be divided into the four following claſſes:

1. Natural.
2. Difficult.
3. Preternatural.
4. Anomalous.

Under one or other of theſe diſtinctions every kind of labour which can occur may be reduced.

SECTION II.

NATURAL labours, which have had their denomination from their frequency, or from the ſhortneſs of the time required for their completion; from the regularity of the manner in which they proceed, or from their being accompliſhed by the unaſſiſted efforts of the conſtitution; form a ſtandard by which we are to judge of every other claſs. It is therefore neceſſary that we ſhould obtain as preciſe an idea of them as the ſubject will allow.

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We will then ſay that every labour ſhall be called *natural*, if the head of the child preſents, if the labour be completed within twenty-four hours, and if no artificial aſſiſtance be required.

Should any of theſe three leading marks of the definition of a natural labour be wanting, it muſt come under ſome other denomination. Thus, if any other part except the head ſhould preſent, the labour would be *preternatural*; if it ſhould be prolonged beyond twenty-four hours it would be *difficult*; and if artificial aſſiſtance were required, though the labour might be completed within one hour, it would be *anomalous*, or muſt be referred to ſome other claſs.

The preſentation of the head of the child conſtitutes an eſſential part of the definition of a natural labour; yet this may happen in various ways. The moſt common poſition of the head, and that in which it is expelled with the greateſt facility, is when the hind-head is diſpoſed to turn towards the *pubis* and the face towards the hollow of the *ſacrum*. But the face is ſometimes inclined towards the *pubis*, and the hind-head towards the hollow of the *ſacrum*; or there may be an original preſentation of

of the face; or one or both arms may deſcend together with the head. Theſe differences in the poſition of the head do not create labours of another claſs; but they are to be conſidered merely as varieties of natural labours, provided the other circumſtances correſpond; experience having fully proved that, in any of theſe poſitions, the head may be expelled by the natural efforts with perfect ſafety to the mother and child, though not with ſuch eaſe and expedition as if the hind-head was turned towards the *pubis*. It muſt alſo be obſerved, though another part of the definition be taken from time, that it is poſſible for one woman to make greater efforts, and to undergo more pain, in two hours than another may in twenty-four. Then the definition will be imperfect; as almoſt all general diſtinctions muſt be when they come to be examined and tried by individual caſes.

A natural labour was the laſt thing well underſtood in the practice of midwifery, becauſe ſcientific men, not being formerly employed in the management of common labours, had no opportunity of making obſervations upon them. Practitioners were then engaged in qualifying themſelves for the manual exer-

ciſe of their art whenever they were called in to give aſſiſtance, and not in making nice diſtinctions or inveſtigating the particular caſes, in which only it might be neceſſary to exerciſe it.

SECTION III.

We have before given an account of the changes which precede labours, and are now to give a detail of the ſymptoms which accompany them.

The firſt ſymptom which indicates a preſent labour is anxiety, apprehenſion of danger, or doubt of ſafety. This does not ſeem to be confined to the human ſpecies, but to be common to all creatures; as they univerſally ſhew ſigns of dejection and diſtreſs at this time, though they ſuffer in ſilence; and even thoſe animals which are domeſticated ſtrive to conceal themſelves, and refuſe all offers of aſſiſtance. This anxiety, which is probably occaſioned by the firſt changes made upon the *os uteri*,

os uteri, and by the conſent between the vital organs and that very irritable part, is often exceedingly increaſed by an original timidity of diſpoſition, eſpecially with firſt children; or by the diſcovery of untoward accidents happening to other women under the ſame circumſtances, with whom a ſimilarity of ſituation is the cauſe of a moſt intereſting ſympathy. From motives of humanity, as well as profeſſional propriety, it is therefore at theſe times neceſſary, by ſteady conduct, and by arguments ſuited to the patient's own notions, or the peculiar cauſe of her fears, to remove her apprehenſions; and, by ſoothing and encouraging language, and by attention to her complaints, though not indicatory of any danger, to afford her every conſolation in our power. This anxiety is greateſt in every woman in the beginning of labour, for the ſharp pains which attend its progreſs generally excite other ſentiments in her mind. But we are at all times to be on our guard, that her fears or ſupplications for relief do not prevail with us to attempt to give aſſiſtance when our interpoſition is not required, and when it muſt neceſſarily be productive of miſchief.

2. At the commencement of labour, and ſometimes on the return of every pain, women have frequently one or more *rigors*, with or without a ſenſe of actual cold. Theſe are not be conſidered as ſigns of the acceſſion of diſeaſe, but as the effects of an increaſed irritability ſpread through the whole frame; or perhaps as proofs that all the powers of the conſtitution are ſummoned to contribute towards the important proceſs which is carrying on. Theſe *rigors* are void of danger, and they are moſt apt to occur when the *os uteri* begins to dilate, and when it is upon the point of being fully dilated. But in the courſe of a labour, in all other reſpects natural, when there is one ſtrong and diſtinct *rigor*, it is often followed by ſome diſeaſe, dangerous either to the mother or child.

3. When the head preſents, and ſcarcely in any other poſition of the child, women have generally ſome degree of ſtrangury in the latter part of pregnancy; and this ſymptom is increaſed on the approach of labour, by the preſſure of the deſcending head upon the *cervix* of the bladder. Should the preſſure be very great, or of long continuance, a ſuppreſſion of urine may be occaſioned before or in the

the time of labour. To prevent the inconveniencies which might ariſe from a diſtention of the bladder, either to the part itſelf, or by obſtructing the paſſage of the head, it is neceſſary to urge the patient to void the urine frequently; and, in caſe of a ſuppreſſion, to give relief by introducing the catheter. On the other hand, ſhould the preſſure by the head be made upon the *fundus* of the bladder, there will be an involuntary diſcharge of the urine at the time of her enduring every pain; or, if there ſhould be any extraordinary agitation from a cough, or any ſimilar cauſe, there will be the ſame conſequence, which is very troubleſome, but not dangerous.

4. It is not unuſual for patients to have a *teneſmus*, or one or two, or more looſe ſtools in the beginning or courſe of a labour. Both theſe ſymptoms may be occaſioned by the conſent between the *os uteri* and the *ſphincter* of the *anus*, or by the preſſure made upon the *rectum*, as the head enters into or paſſeth through the *pelvis*. There is in the minds of all women a popular prejudice and unreaſonable dread of complaints in the bowels, through every ſtage of pregnancy, parturition, and childbed; and of courſe there is never any

objection, but, on the contrary, a willingneſs to uſe ſuch means as are adviſed to ſuppreſs them, or reſtrain any diſpoſition to a *diarrhœa*. The error has ariſen from their confounding the looſeneſs, which often accompanies the laſt ſtage of the puerperal fever, with that which proceeds from any other cauſe. But the *diarrhœa* which attends the beginning or courſe of a labour is ſo far from occaſioning or from proving any danger, that the patient is evidently relieved by it; a greater freedom being given to the action of the *uterus*, more room made for the paſſage of the child, and any feveriſh diſpoſition thereby removed or prevented. If, therefore, the patient ſhould not at that time have ſtools ſpontaneouſly, it is very ſound practice to direct one or more emollient clyſters for the beforementioned purpoſes. Nor are thoſe the only good ends which are anſwered by clyſters; for they ſoothe the parts when too much or improperly irritated, and ſerve as a fomentation, which, by its warmth and moiſture, may give or amend their diſpoſition to dilate. In very ſlow labours, when the head of the child has dwelt for a long time in one poſition, it is not unuſual for the patient to have one or more looſe

looſe ſtools immediately before the advancement of the head, after which the labour is ſoon concluded.

5. The uncoloured mucous diſcharge from the *vagina*, which pretty generally occurs before labour, on its acceſſion is uſually tinged with blood, or a ſmall quantity of pure blood is diſcharged. This ſanguineous diſcharge, which varies in quantity and appearance in different women, is popularly called a *ſhew*, and it happens more particularly at two periods of a labour; when the *os uteri* begins to dilate, and when it is finally dilated. In the firſt inſtance it is probably occaſioned by the ſeparation of a few of thoſe veſſels by which the membrane, which connects the *ovum* to the *uterus*, was originally bound; and in the ſecond by the effuſion of ſome blood before extravaſated in the ſubſtance of the *os uteri*; for this part in ſome caſes acquires an uncommon thickneſs from that cauſe, independent of any edematoſe or inflammatory tumefaction. In many caſes there is no coloured diſcharge in any period of a labour, and then the dilatation generally proceeds more ſlowly; for the diſcharge is not only a ſign that the parts are in a ſtate

diſpoſed to dilate, but it alſo improves that ſtate. It is not only in colour or quantity that there is found much difference, either in the ſanguineous or mucous diſcharge, but alſo in the conſiſtence and tenacity of the latter; it being in ſome caſes thin and watery, and in others thick and extremely viſcous.

6. But all theſe ſymptoms are not poſitive proofs of the exiſtence of labour; for we cannot conſider a woman as being in actual labour, unleſs ſhe has the uſual pains. Nor does all pain in the region of the *uterus* certainly prove that a woman is in labour, becauſe ſuch pain may be excited towards the concluſion of pregnancy by various cauſes beſides the action of the *uterus*. Theſe pains are therefore diſtinguiſhed into two kinds, *true* and *falſe*; but the ſeat, the manner, and the degree of theſe pains, often reſemble each other ſo nearly, that it is very difficult or impoſſible to diſtinguiſh them; and we are obliged to wait for the event, before we are able to decide.

The *true* pain of labour uſually begins in the loins, or lower part of the back, ſurrounds the *abdomen*, and terminates at the *pubes*, or upper part of the thighs; and it ſometimes obſerves

obſerves a quite contrary direction. In ſome caſes the pain is confined to one particular ſpot, as the back, *abdomen*, thighs, or inferior extremities; in others the pain is ſeated in ſome part far diſtant from the *uterus*, as in the knees, heels or feet. In ſome the ſtomach is affected; in others, though very rarely, the brain; and then convulſions, or ſome derangement of its functions, are brought on. In ſhort, the varieties of pain as well as its effects, are innumerable; and theſe are explained by what we really do know, or fancy we know, of the influence of the nervous ſyſtem.

The pain attending a labour is periodical, with intervals of longer or ſhorter duration, according to the action of the *uterus*, on which it depends; and the more the pains are multiplied the better it is for the patient. For, if an effect of great importance to the conſtitution is to be produced, the more ſlowly it is made, provided the ſlowneſs of the progreſs does not depend on any morbid cauſe, the more gradual will be the change, and of courſe the danger which ſudden violence might produce be avoided or leſſened; the diviſion of the pain being equal to the

diminution, nearly in the ſame proportion as rapidity is an addition to force. It is an old obſervation, confirmed by daily experience, that, after the completion of ſlow or lingering labours, patients uſually recover better than after thoſe which are quick; not to mention that they are leſs liable to the untoward accidents which precipitation may immediately produce.

Thoſe who endure any kind of pain expreſs their ſuffering by ſome peculiarity of manner, or by ſome tone of voice, which to a nice obſerver will generally diſcover the part affected, together with the kind and degree of pain. Sharp pain is univerſally expreſſed by an interrupted and acute tone of voice; obtuſe pain by a continued and grave tone, unleſs the expreſſions are controlled by an acquired firmneſs of mind, which on particular occaſions may enable it to riſe above the infirmities of the body. The expreſſions of pain uttered by women in the act of parturition may be conſidered as complete indications of the ſtate of the proceſs, ſo that an experienced practitioner is often as fully maſter of the ſtate of his patient, if he hears her expreſſions, as by any mode of examination.

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He muſt however underſtand and make allowances for the peculiarities of different patients, or he will be deceived; becauſe in tender conſtitutions, the ſenſations being quick and the reſolution faint, the mode of expreſſion will be according to the ſenſe, and not in proportion to the degree of abſolute pain.

In the firſt ſtage of a labour the change conſiſts in the dilatation of the parts. Forcible or quick dilatation gives a ſenſation ſimilar to that produced by the infliction of a wound, and it is equally expreſſed by an interrupted and acute tone of voice. Theſe are popularly called *cutting*, *grinding*, or *rending* pains. When the internal parts are dilated, and the child or contents of the *uterus* begin to deſcend, the patient is by her feelings obliged to make an involuntary effort to expel; and the expreſſions are then made with a continued and grave tone of voice, or ſhe is mute. Theſe are called *bearing* pains. But there is an intermediate period of a labour in which there is in the firſt inſtance ſome degree of dilatation, and afterwards an effort to expel; and then there will be the expreſſion which denotes ſharp pain, combined, or immediately ſucceeded by a graver tone of voice. When the

the child firſt begins to preſs upon and to dilate the external parts, the expreſſion becomes again acute and vehement; and, laſtly, the expulſion of the child is accompanied with an outcry of ſuffering beyond what human nature appears able to bear; or the pain is endured with ſilence. The knowledge of theſe circumſtances, though apparently trifling and contingent, is really of ſome importance in practice, and permanent; as far, at leaſt, as the freedom or reſtraint of the breathing can operate. If, for example, on any principle the patient was induced, in the beginning of labour, to retain her breath, and to make ſtrong efforts to expel, the order of the labour would be inverted, as it would alſo when the parts were dilated and the expulſatory power wanted, if ſhe ſhould exclaim.

The pains of labour or childbirth, and the action of the *uterus*, are terms uſed ſynonymouſly; but they are not exactly the ſame thing. The action of the *uterus*, by which its contents are compreſſed into a leſs ſpace, and would be excluded if there was any opening for their paſſage, firſt takes place as a cauſe; and this does not ſeem to be attended with pain. When ſome part reſiſts the paſ-

ſage

ſage of the contents of the *uterus*, the excluſion of which is the effect to be produced, there will then be pain proportionate to the action, to the ſenſation of the reſiſting part, and the reſiſtance made. There is no way by which we can eſtimate the degree of force but by the reſiſtance; nor the reſiſtance but by the pain attending it; nor the pain but by the expreſſion. Judging by induction of the force exerted, by the expreſſion of the pain, we ſay in common language a weak pain, a ſtrong pain, or a woman is delivered by her pains; and the purpoſe of conveying our meaning is anſwered, though the expreſſions are not ſtrictly legal. We may ſuppoſe the parts through which the child muſt paſs ſo perfectly diſpoſed to dilate, that they would make little or no reſiſtance to the excluding force, and then a woman would be delivered with little or no pain. This obſervation will not only diſcover the reaſon of the great advantage obtained by a labour being ſlow and lingering; why ſome women are delivered comparatively without pain; but, with this perfect diſpoſition to dilate, if the patient ſhould be aſleep when the action of the

uterus

uterus came on, the poſſibility of her being delivered before ſhe was quite awake.

In the converſation of thoſe who attend labours it is often ſurmiſed that women have much unprofitable pain. This ſtatement is not only unfair as to the fact, but the language is very diſpiriting; and it is often aſſigned as a reaſon for an interpoſition altogether unneceſſary, and often injurious to the mother or child. No perſon in labour ever had a pain which was in vain. It may not be equal to the accompliſhment of the effect we want, or at the time we wiſh, but every pain muſt have its uſe, as preparatory to, or abſolutely promoting, the effect; and, as we are not able to comprehend every poſſible cauſe of every ſtate, by endeavouring to remove what appears to be one ſlight ill, it often happens that we occaſion many, and thoſe of greater conſequence.

Though the pains of labour return periodically, the intervals between them are of different continuance. In the beginning the pains are uſually ſlight in their degree, and have long intervals; but as the labour advances they become more violent, and the intervals are ſhorter. Sometimes the pains are alternately

ſtrong and weak, or two feeble and one ſtrong; and there is reaſon to think that every variety has its advantage, by being ſuited to the apparent or real internal ſtate of every individual patient. In every circumſtance which relates to natural parturition it is impoſſible not to ſee, and not to admire, the wiſdom and goodneſs of Providence, in ordaining the power and fitting the exertion to the neceſſities of the ſituation, with a marked reſpect to the ſafety both of the mother and child. This perfect coincidence between the cauſe and effect ſhould afford a leſſon of patience to thoſe perſons who when in labour become intractable, and, by loſing their ſelf-poſſeſſion, add to the unavoidable evils of their ſituation; and to thoſe practioners who, being led away by popular errors, aim to add to the ſtrength of the pains, or to quicken their returns, and act as if they thought there was no other evil but that of a ſlow labour; an opinion which in its conſequence has done more miſchief than the moſt ſkilful practice ever did good.

SECTION

SECTION IV.

THOUGH it was ſaid that pain was, properly ſpeaking, a conſtituent part of a labour, it was alſo obſerved that all pain in the region of the *uterus*, though periodical in its returns, was not a poſitive proof of the exiſtence of a labour. For whatever diſturbance is raiſed in the conſtitution, eſpecially in thoſe parts connected or readily conſenting with the *uterus*, towards the concluſion of pregnancy, it is very apt to induce the ſymptoms of labour, in a manner which makes it difficult to diſtinguiſh between *true* and *falſe* pain. Yet the good of the patient, as far as relates to the proper conduct of the enſuing labour, may depend upon the juſtneſs of the diſtinction; for if the pain, which is *falſe*, be encouraged or permitted to continue, the action of the *uterus* would follow, and premature labour be occaſioned.

The cauſes of falſe pain are various; as fatigue of any kind, eſpecially too long ſtanding; ſudden and violent motions of the body; coſtiveneſs, or a *diarrhœa*; general feveriſh diſ-

poſition; agitation of the mind, and a ſpaſmodic action of the *abdominal* muſcles. Very frequently alſo the irregular and ſtrong movements of the child, in irritable conſtitutions, occaſion pains like thoſe ariſing from the action of the *uterus* at the time of labour. In ſome caſes there is ſuch a cloſe reſemblance between *true* and *falſe* pains, that they cannot be diſtinguiſhed without an examination *per vaginam*. If, during the continuance of a pain, no preſſure upon or dilatation of the *os uteri* can be perceived, we may conclude that the pain is not the conſequence of the action of the *uterus*; and, whatever likeneſs it may have, that it is not *true* pain. But if there ſhould be preſſure upon or dilatation of the *os uteri* during the continuance of the pain, we may conſider it as proceeding from the action of the *uterus*, and be perſuaded that the patient is really in labour. In a few caſes I have known the action of the abdominal muſcles ſo regular and ſtrong that the whole volume of the *uterus* has been heaved up and down alternately, in ſuch a manner, that it was ſcarcely poſſible to diſtinguiſh between this ſtrange ſuccuſſion and the proper action of the *uterus*.

The means to be uſed for the relief of *falſe*

pain

pain muſt be guided by the cauſe. When it is occaſioned by fatigue of any kind, immediate eaſe will often be gained by a ſhort confinement in an horizontal poſition. In plethoric habits, or with a feveriſh diſpoſition, it will be neceſſary to take away ſome blood; and, when the patient is coſtive, to procure ſtools by emollient clyſters or gently opening medicines. In every caſe, when means adapted to the apparent cauſe have been uſed, it will be proper to give an opiate proportioned to the degree of pain, or to repeat it in ſmall quantities at proper intervals till the patient ſhall be compoſed.

SECTION V.

It has been thought equally incumbent upon the practitioner to promote the power and effect of *true* pain, as it was to quiet that which was *falſe*. This opinion is perhaps more univerſally popular than any other throughout medicine; and, having infected the

the minds of practitioners, it has been as injurious as general. From this source may be traced the opinion of the necessity, and the abominable custom of giving assistance as it is called, by dilating the internal and external parts artificially; of giving hot and cordial nourishment during labour, even in plethoric habits and feverish dispositions, by which the nature of the principle which should actuate the *uterus* is changed, the pains are rendered disorderly and imperfect, and the foundation of future mischief and difficulties, in one form or other, invariably laid. Hence also was derived the doctrine of the necessity of patients helping themselves, as it is called, by urging with all the voluntary force they are able to exert beyond the dictates of nature; as if a labour was a trick to be learned, and not a regular process of the constitution. Women should be informed that the best state of mind they can be in at the time of labour is that of submission to the necessities of their situation; that those who are most patient actually suffer the least; that, if they are resigned to their pains, it is impossible for them to do wrong; and that attention is far more frequently required to prevent hurry than to forward a la-

bour. In every thing which relates to the act of parturition, Nature, not disturbed by disease, and unmolested by interruption, is fully competent to accomplish her own purpose; she may be truly said to disdain and to abhor assistance. Instead, therefore, of despairing and thinking they are abandoned in the hour of their distress, all women should believe, and find comfort in the reflection, that they are at those times under the peculiar care of Providence; and that their safety in childbirth is ensured by more numerous and powerful resources than under any other circumstances, though to appearance less dangerous.

SECTION VI.

In order to give a full and distinct view of a natural labour, it is expedient to divide the process into three periods or stages. In the first will be included all the circumstances which occur, and all the changes made, from the commencement of the labour to the complete

plete dilatation of the *os uteri*, the rupture of the membranes, and the diſcharge of the waters; in the ſecond, thoſe which occur from that time to the expulſion of the child; and in the third, all the circumſtances which relate to the ſeparation and excluſion of the *placenta*.

In the beginning of labour the *os uteri* is found in very different ſtates in different women. In ſome it is extremely thin, and in others of conſiderable thickneſs; in ſome it is rigid and cloſely contracted, but in others it is much relaxed, and ſomewhat opened for ſeveral days, or even weeks, previous to the acceſſion of labour. In ſome caſes the *os uteri* remains ſo high that it can with difficulty be reached, in the centre of the ſuperior aperture of the *pelvis*, projected backwards or on either ſide; whilſt in others it is ſpread thin, and preſſed very low before it begins to dilate. There is, in ſhort, every variety of ſtate and poſition which a part conſtructed and connected like the *os uteri* can be thought capable of undergoing.

The firſt part of the dilatation is generally made very ſlowly, the action of the *uterus*, on which it depends, being feeble in its power

and flow in its returns; but the more perfect the ſtate of relaxation is, with the greater facility the dilatation will of courſe be made. This is at firſt effected by the ſimple preſſure of the contents of the *uterus* upon the *os uteri*; but when the dilatation is made to a certain degree the membranes containing the waters of the *ovum* are inſinuated within the circle of the opening *os uteri*, and form a ſoft pillow, which, at the time of every pain, acting upon the principle of a wedge, operates with increaſing force according to the ſize it acquires; in conſequence of which the latter part of the dilatation uſually proceeds with more expedition than the former.

There is no poſſibility of prognoſticating how long a time may be required for the complete dilatation of the *os uteri*; yet a tolerable conjecture, ſubject however to many deviations, may be formed by a perſon who has had much experience. If, for example, after the continuance of the pains for three hours the *os uteri* ſhould be dilated to the ſize of one inch; then two hours will be required for dilating it to two inches; and three hours more will be neceſſary for dilating it completely, provided the action of the *uterus* ſhould pro-

ceed with regularity and with equivalent ſtrength. But in ſome caſes the *os uteri* will abide in nearly the ſame ſtate for ſeveral hours; and when the dilatation begins it will ſoon be perfected. In others, after a certain degree of progreſs, the action of the *uterus* will be ſuſpended for many hours, and then return with great vigour; ſo that all which can be ſaid on this ſubject is mere conjecture.

With firſt children this ſtage of a labour often makes the moſt tedious and important part of a labour, both on account of the time requiſite for completing the dilatation of the *os uteri*, and becauſe the accompanying pain is more ſharp and harder to bear than that which is attended with the effort to expel; which never fails to inſpire the patient with the hope of being ſoon freed from the miſery which ſhe endures. When the parts are to our apprehenſion in the ſame ſtate, there will be a wonderful difference in the manner of, and the time required for, their dilatation, in firſt and ſubſequent children. There might be much difficulty in exploring and aſcertaining the cauſe of this difference: but we may preſume that a part which is accuſtomed to perform an office, or undergo a change, acquires

a diſpoſition to the office or change, according to the number of times it has performed that office, or undergone that change. Something of the kind may be obſerved in new-born infants, in which there is often a tardineſs in executing what may be conſidered as the common functions of the body.

As a labour advances the intervals between the pains become ſhorter, and their force is increaſed. At the time of each pain the patient is reſtleſs, and ſolicitous for the event; but when it ceaſes, by a happy oblivion, ſhe ſoon forgets it, and is unmindful of its return. In ſome conſtitutions the labour, inſtead of adding to the irritability of the habit, and exciting its powers to action, occaſions a degree of inſenſibility; or the patient falls into a ſound ſleep the moment the pain begins to abate, from which ſhe is awakened by its return. In others, the power exerted by the *uterus*, aided by that of the abdominal muſcles and diaphragm, being inſufficient for the purpoſe of dilating the *os uteri*, or that part becoming unuſually irritable by the frequent impreſſions made upon it; then, by its conſent with the ſtomach, extreme ſickneſs or vomiting is brought on, ſometimes after every pain, by which

which the labour is very much forwarded; one fit of vomiting, according to popular obſervation, doing more ſervice than ſeveral pains. But when the *os uteri* is dilated patients have very ſeldom an inclination to vomit from any natural cauſe. Vomiting very often attends the paſſage of a ſtone through the *ureters*, or the *gall-ducts*, from the ſame cauſe, and with the ſame effect.

By regular returns of pain, or with the varieties before mentioned, with many others which it is impoſſible to enumerate, the *os uteri* becomes at length wholly dilated. Whether a ſhort or a long time be required for this purpoſe, it is the duty of the practitioner to abſtain from interfering in this part of the proceſs. It may ſometimes be neceſſary to pretend to aſſiſt, with the intention of giving confidence to the patient, or compoſing her mind. But all artificial interpoſition contributes to retard the event ſo impatiently expected, by changing the nature of the irritation and the action thereon depending; by inflaming the parts, and rendering them leſs diſpoſed to dilate; in ſhort, by occaſioning either preſent diſorder or future diſeaſe. For theſe reaſons we muſt be firm, and reſolved to with-

ſtand the entreaties which the diſtreſs of the patient may urge her to make, as we muſt alſo the dictates of vehemence and ignorance. Others may be impatient, but we muſt poſſeſs ourſelves, and act upon principle. The event will juſtify our conduct; and, though there may be temporary diſlike and blame, if we do what is right there will be permanent favour and reputation.

During the continuance of a pain the membranes containing the waters are turgid, preſſed upon, and within the circle of the *os uteri*, according to the ſtrength of each pain, by which the further dilatation is promoted; but in the abſence of a pain the membranes become flaccid, and ſeem to be empty. Theſe different ſtates of the membranes are readily explained by the obſervations before made, by our knowing that when the *uterus* is in action its cavity is leſſened, and of courſe its contents are compreſſed; but on the ceſſation of the action the cavity of the *uterus* is again enlarged, and the compreſſion removed. Hence it becomes neceſſary, when an examination *per vaginam* is made during the time of a pain, that we ſhould be cautious not to break the membranes; and if any accurate inveſtigation be needful,

needful, either of the ſtate of the parts or of the poſition of the child, that it ought to be made in the interval between the pains, or protracted till the pain has ceaſed.

In a ſhort time after the *os uteri* is wholly dilated, the membranes are uſually ruptured by the force of the pains, and the waters of the *ovum* are diſcharged in one large guſh or ſtream. But in many caſes the membranes break ſpontaneouſly long before this period, without any material inconvenience. In ſome they are not ruptured when the dilatation of the *os uteri* is completed, but are protruded by each ſucceſſive pain lower down into the *vagina*, and then within the *os externum*, which they alſo dilate; and at length a ſmall bag of water is formed without the *os externum*, which can ſerve no farther purpoſe.

It is a commonly received opinion among the lower claſs of people that the child ſhould be born ſpeedily after the rupture of the membranes and the diſcharge of the waters. This opinion is not founded in prejudice, but in ſound obſervation; and was probably firſt entertained by thoſe who were engaged in the care of breeding cattle, in which this is the uſual courſe of parturition: and I believe it would

would more frequently happen in the human ſpecies if the progreſs of the labour were not by ſome means or other diſturbed or interrupted. But it has been a cuſtom, which at the preſent time is not unfrequent with practitioners, urged by the diſtreſs and ſuffering of thoſe whom they are attending, or by the concern of friends, or by a perſuaſion of its propriety and advantage, and ſometimes perhaps by their own impatience, to break the membranes before the *os uteri* is dilated. If theſe are ruptured ſpontaneouſly or artificially before the *os uteri* is dilated the child cannot poſſibly follow immediately; and all that is gained is by bringing the head of the child, inſtead of the membranes containing the waters, into contact with the *os uteri*. This cannot be conſidered as any advantage, as it changes a very ſoft and accommodating medium, provided by Nature for the purpoſe of preventing any undue violence upon a very tender part, for the hard and unaccommodating head of the child. Nor is this the only ill conſequence which follows: by ſuch proceeding we occaſion a general derangement of the order of the labour, which is never done with impunity, as it may afterward become

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the cauſe of a laceration of the external parts, or even of an unfavourable ſeparation of the *placenta*. Moreover, by this premature rupture of the membranes, we often defeat our own purpoſe; and, by diſturbing, protract inſtead of haſten the labour. We will therefore agree in eſtabliſhing it as a general rule for own conduct, that the membranes ſhall never be ruptured artificially, at leaſt before the *os uteri* is fully dilated, and be perſuaded that it is afterwards unneceſſary, unleſs there ſhould be ſome cauſe more important, or ſome reaſon of more weight than thoſe which have been commonly aſſigned.

SECTION VII.

In the ſecond period or ſtage of a labour will be included all the circumſtances attending the deſcent of the child; the dilatation of the external parts; and the final expulſion of the child.

Notwithſtanding the definition of a natural labour, which was before given, this is not to be

be conſidered as a proceſs going on in one unvarying line, and that every aberration is to be thought of ſufficient importance to conſtitute a labour of another claſs. In this reſpect the definition of a labour may be compared to that of health, which, however correct in general, if ſubmitted to a critical examination, would not correſpond in all points with the ſtate of any individual perſon. In like manner, though a labour cannot come under the denomination of *natural*, without the three diſtinguiſhing features, yet we may probably never meet with any two labours in every reſpect exactly ſimilar. There are perhaps more frequent deviations in the firſt ſtage of a labour than in any other, both with regard to the time and the manner in which the *os uteri* is dilated. Nor is the firſt ſtage concluded either by the dilatation of the *os uteri*, or by the rupture of the membranes and the diſcharge of the waters, but by the concurrence of theſe circumſtances; and the farther the labour is advanced before the membranes break, the better it afterwards terminates. For, before that event, there is leſs violence done to the mother, and leſs ſtreſs upon the parts; becauſe, without much ſuffering, they every moment acquire a better

diſpoſition

diſpoſition to dilate; and, till that has happened, whatever may be its poſition, the child undergoing no compreſſion is free from all chance of injury.

When the membranes break, if the *os uteri* be fully dilated, the child, though reſting at the ſuperior aperture of the *pelvis*, either ſinks by its own gravity, if the patient be in an erect poſition, or is propelled by a continuance of the ſame pain by which they were broken; or, after a ſhort reſpite, the action of the *uterus* returns, and the head of the child is brought ſo low as to preſs upon the external parts; properly ſpeaking, upon the internal ſurface of the *perinæum*. In its paſſage through the *pelvis*, the head of the child, which at the ſuperior aperture was placed with one ear to the *pubis* and the other to the *ſacrum*, or with different degrees of diagonal direction, undergoes various changes of poſition, by which it is adapted to the form of each part of the *pelvis*, with more or leſs readineſs, according to its ſize, the degree of its oſſification, and the force of the pains. With all theſe changes, whether produced eaſily or tediouſly, in one or in many hours, the practitioner ſhould on no account interfere, provided the labour be

natural.

natural. If he attempts to correct and to regulate every ſlight deviation, or uſes any artificial means for haſtening the proceſs, the events of his practice will convince him that he has exerciſed his art on unneceſſary and improper occaſions. He will moreover be taught, though he may acquire momentary approbation by endeavouring to remove every little preſent inconvenience, that diſeaſes then far diſtant will be attributed to his miſconduct, and ſometimes not without reaſon. In this ſtate and kind of labour he may with confidence rely upon the powers and reſources of the conſtitution, which will produce their effect with leſs injury either to the mother or child, and with more propriety than can be done by the moſt dexterous human ſkill.

When the head of the child begins to preſs upon the external parts, theſe yield in a ſhorter or longer time, and with more or leſs eaſe, according to their natural rigidity, the degree of diſpoſition to dilate which they have aſſumed during the labour, and the number of children which the patient has before had. The prevention of any injury to the mother when the child is paſſing through the external parts being eſteemed a circumſtance wholly depend-

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ing upon the care of the practitioner, this part of our ſubject deſerves a ſeparate and particular inquiry.

SECTION VIII.

When the head of the child firſt begins to preſs upon and dilate the external parts, every pain may be ſuffered to produce its full and natural effect, without the hazard of miſchief. But when a part of the head is inſinuated between them, and the *perinæum* is upon the ſtretch, they are liable to be injured by the violence of the diſtention. Any of theſe parts may be injured; but the *perinæum* in particular is ſubject to a laceration, which may not only extend ſo far as to occaſion much preſent uneaſineſs, but very deplorable conſequences for the remainder of the patient's life. It is therefore our duty to enquire into the merits of the different methods which have been recommended for the prevention of this accident, more eſpecially as it admits of very imperfect relief when it has happened.

Yet

Yet it is very remarkable that none of the ancient writers * either adviſe any method by which this accident may be prevented, or any means to be uſed for its relief, excepting ſuch as were generally recommended for inflamed, ulcerated, or fiſtulous parts. We may therefore preſume that it is an accident which did not frequently occur in their practice, or that it was eſteemed of too little conſequence to engage their attention. With reſpect to the former opinion, it may be obſerved, that whatever event is the conſequence of any cauſe muſt at all times be produced under the ſame circumſtances, if that cauſe continues to exiſt and to act. But thoſe who had not perfection in view, and formed no very nice rule for their own conduct, might not be ſenſible of deviations, and would not adjudge diſagreeable conſequences to their own error or miſmanagement. They did not therefore adviſe any method of preventing this ac-

* In the works of *Eros*, who lived in the 13th century, and which were publiſhed by *Spachius*, this accident is mentioned, and an awkward method of preventing it is recommended.

cident,

cident, becauſe they were ignorant of the cauſe, or they undervalued it.

It may be further obſerved, that the oldeſt writers in midwifery lived before the Chriſtian religion was eſtabliſhed, and in countries in which polygamy was allowed; when the death or infirmity of one wife was comparatively of little importance to him who had many, equally, or in ſome degree, dividing or partaking of his affection. But on the eſtabliſhment of the Chriſtian religion, by which the ſelfiſh and bad diſpoſitions of the human mind were intended to be reſtrained or corrected, and its better qualities exalted, one wife only being allowed to one man, and ſhe being ſuppoſed to poſſeſs the entire affections of her huſband, every diſeaſe or infirmity, which might render her perſon leſs agreeable to him, became of infinite conſequence to their mutual happineſs. Thoſe only who in the preſent ſtate of ſociety have had an opportunity of ſeeing the many evils which flow from this alienation of affection, the cauſe being perhaps unknown to the parties themſelves, can be ſufficiently aware of the importance of this and many other accidents to which women are ſubject; and which are often neglected

and diſregarded, becauſe they are not attended with immediate danger.

Still the queſtion remains to be decided, whether women are by any peculiarity of conſtruction naturally or neceſſarily ſubject to a laceration of the *perinæum*; or whether this accident be the conſequence of erroneous opinions, and of alterations in the frame, occaſioned by the peculiar manners of ſociety; or of any adventitious circumſtance whatever, at the time of delivery. It was before obſerved *, that none of the claſſes of animals are liable to a laceration of the *perinæum*, except when extraordinary aſſiſtance is given in caſes of otherwiſe inſuperable difficulty; and it is well known that the laceration in any degree, does not univerſally happen to thoſe women who are delivered before proper aſſiſtance can be given. It is alſo to be remarked that, as far as relates to the ſtate of all the internal parts, the changes which they undergo at the time of parturition are not only effectually, but moſt ſafely produced by the inſtinctive efforts of the parent. From a general ſurvey of the wiſdom, order, and benignity, ſo clearly apparent in all the deſigns of Providence, in every

* See *Chap.* II. *Sect.* VI.

circumſtance

circumſtance particularly which relates to the propagation of the different ſpecies of animals, and the co-aptation, as it were, of that wiſdom to the neceſſities of thoſe of every kind, we might perhaps be juſtified in making this general concluſion, that women, in every circumſtance which relates to their ſafety and well-doing in natural parturition, are not left in a more deſtitute ſtate than animals. For though it were proved that women are liable to greater natural evils and difficulties in parturition than animals, the proofs of theſe would equally ſatisfy our minds that they are alſo provided by nature with many peculiar reſources, and with powers which are in general, limited only by the degree of the difficulties which require their exertion.

Nevertheleſs, from the frequency of the laceration of the *perinæum*, when women are delivered without aſſiſtance, and from the difficulty with which it is ſometimes prevented when the moſt judicious and ſkilful aſſiſtance is given, it is believed by many that women muſt often be unavoidably ſubject to it, and that the prevention muſt ever remain an object of human ſkill. Now, with reſpect to the firſt ſtatement, that of the laceration hap-

pening when women are delivered without aſſiſtance, it does not follow that it is inevitable; for even then it may be the production of error in the patient herſelf, or her friends. Becauſe, from the hurry and ſolicitude of their minds, and even by their fears, ſhe may have been encouraged to make great voluntary efforts, when the head of the child was on the point of coming into the world, merely becauſe ſhe was not aſſiſted; or, after the expulſion of the head, inſtead of waiting for the body to be expelled alſo, ſome officious perſon preſumed to extract it without regard to time, or the direction of the *vagina*. As to the difficulty or impoſſibility of preventing the laceration in ſome caſes, we are to conſider that what may happen in a ſtate of ſociety might not have happened in a ſtate of nature; that the foundation of the accident may have been laid by ſomething done in the preceding ſtage of the labour; and that it may be very much doubted, whether ſome of the methods practiſed for the prevention may not in fact have been the cauſe of the accident.

But the conduct of the practitioner is not to be guided by reflections on what his patients might do or bear, with conſtitutions healthy and

and firm, and with minds untainted with prejudices; but by due conſideration of what they are *now* capable of doing or bearing; and he muſt adapt his rules and his practice to the ſtate in which he actually finds them. From ſome natural or acquired cauſe the laceration of the *perinæum* certainly does very often happen; and as ſo much of the future happineſs of a woman may depend upon its prevention, we will grant, what is in many caſes true, that it is always to be prevented by our ſkill and care; as no harm can ariſe from the opinion, though erroneous, if the aſſiſtance we afford be judiciouſly given.

In the beginning of a labour, eſpecially with firſt children, it is not unuſual to find the external parts cloſely contracted, and void of all diſpoſition to dilate: yet in the courſe of a few hours, even when they have undergone no kind of preſſure or diſtention, but merely by a diſpoſition aſſumed from their conſent with the internal parts, they become relaxed and ſoft. The longer the time therefore which paſſes between the commencement of a labour and the birth of the child, the leſs liable to a laceration will the *perinæum* be; for it is never lacerated in a very ſlow labour, whatever may

be the ſize of the child. But if it was poſſible to hurry a labour in ſuch a manner that the head of the child ſhould be brought into contact with, and preſſed forcibly upon, the external parts, before they had acquired the diſpoſition to dilate, they would be univerſally torn, unleſs the accident was prevented by art; and the chance of the accident would be according to the degree of precipitation, and perhaps many hours after the act, by which the labour was hurried, was forgotten.

When the head of the child is inſinuated within the external parts, if theſe do not eaſily yield to the occaſion, it has been cuſtomary to dilate them artificially, under the idea of preparing them, to allow of the more ſpeedy paſſage of the head. During every pain, it is obvious that the parts undergo as much diſtention as they are capable of bearing without injury; and this preparation, as it is called, irritating and cauſing an additional ſtreſs upon them, nothing is more clear than that this method of proceeding contributes to their laceration. All artificial dilatation of the parts, all attempts to ſlide the *perinæum* over the head of the child ſpeedily, are therefore to be forborne and avoided as pernicious.

When

When the external parts are very rigid we have been taught that it is of great ſervice to anoint them frequently and unſparingly with ſome unctuous application, with the intention of giving or improving that diſpoſition to dilate which is wanting. If the parts are cloathed with their proper *mucus*, as by the uſe of any application in the manner adviſed, that would be abſterged, we ſhall afterwards find ointments of any kind a very poor ſubſtitute for that *mucus*, and that there is little profit from their uſe. But if the parts, from any cauſe, ſhould become heated and dry, after the application of flannels wrung out of warm water, ſome ſoft and ſimple ointment may be ſerviceable, by abating their heat, giving them a diſpoſition to ſecrete their proper *mucus*, and of courſe favouring their dilatation.

In ſome conſtitutions the different parts concerned are not equally inclined to dilate. Sometimes the internal parts dilate in the moſt kindly manner, when the external are in a contrary ſtate; and ſometimes the internal are very rigid, when the external parts have the greateſt aptitude to dilate, yielding to the firſt impulſe of the head. There is in all infinitely more difficulty with the firſt than with ſubſequent children, not from rigidity only, but,

if we may be allowed the expreſſion, from ignorance how to dilate; and from a certain degree of re-action in the parts during the continuance of every pain. It is therefore often obſerved that the head of the child advances more, and with greater ſafety, when the violence of a pain begins to abate, than during its continuance in full force; becauſe the re-action of the parts is then the ſtrongeſt.

During a pain there is often reaſon to expect that the head of the child would be excluded; but the moment the pain declines the head is retracted a conſiderable way into the *vagina*, and the external parts cloſe again. No other inconvenience ariſes from this cauſe than a little prolongation of the labour, which may be irkſome, but cannot be injurious. If the parts do not diſtend favourably, ſhould the head of the child abide within them in the abſence of a pain, it may be expedient to repel it in imitation of this natural occurrence, for the purpoſe of preventing the laceration.

When the head of the child is every moment expected to paſs through the external parts, we have been adviſed by ſome to forward the emergence of the head from under the arch of the *pubes*. Others have on the contrary aſſured us that it is more eligible to prevent,

prevent, for a certain time, this emergence, by which means not only time is given for the parts to dilate, but the head of the child is brought to paſs through them in its ſmalleſt *axis*, and leſs diſtention is thereby occaſioned. Whoever has reflected upon this ſubject would heſitate as much to believe that, in the general diſpenſation of Providence, it ſhould have been left to human ſkill to guide the head of the child at the time of birth in a direction different from that in which it moſt commonly preſents, as that it could have been intended for the generality of children to have been brought into the world by inſtruments or by any human invention. As far as my experience enables me to judge, neither of theſe methods ought to be followed, nor any other which requires a complication of artifice; for, after a trial of them all, I am convinced that the moſt effectual method of preventing a laceration, or any injury to the parts, is to be founded on the ſingle principle of retarding, for a certain time, the paſſage of the head of the child through them. This retarding may depend on the compoſure of the patient, and the ſkill of the practitioner; and thoſe errors, of which the former might be guilty, the latter muſt endeavour to obviate and correct.

When

When the head of the child is nearly born the effort to expel is made inſtinctively, and it is uſually vehement, the breath being retained for the purpoſe of ſtrengthening that effort. The patient may alſo, from a perſuaſion of its being neceſſary and proper, or at the inſtance of her friends, ſtrive with much voluntary exertion to add to the force of the pain, for the purpoſe of expelling the child more ſpeedily. If we preſume that the danger of injuring the parts depends merely upon the rapidity with which the head may be expelled, and that theſe are only able to bear without injury ſo much diſtention as is occaſioned by the inſtinctive efforts, then all the additional voluntary force is beyond what is either needful or ſafe. * It is therefore requiſite that we ſhould do away this voluntary force by convincing the patient of its impropriety, and diſſuading her from exerting herſelf, or leſſen at leaſt the voluntary effort, by urging her to talk or cry out during the time of a pain, which will prevent her from retaining her breath; or, if her ſufferings are ſo great that ſhe cannot command her own actions, then the efforts ſhe makes muſt be re-

* See *Chap.* II. *Sec.* VI.

ſiſted

ſiſted on our part by the application of ſome equivalent force, in the manner we ſhall ſoon conſider. When the patient has been outrageous, and the danger of a laceration very great, I have ſometimes gained a reſpite by telling her ſuddenly, in the height of a pain, that the child was already born.

Every thinking man will carry the principles he has conſidered and approved, in his remembrance, through the whole courſe of his practice; but the methods by which his principles are purſued muſt be carefully ſuited to the particular exigences of every individual caſe. In the ſubject of which we are now ſpeaking there is a number of little circumſtances, the knowledge of which can only be learned by reflection and experience. But it will generally be ſufficient for the practitioner to reſiſt the progreſs of the head of the child, during the time of a pain, by placing upon it the fingers and thumb of the right-hand, ſo formed that they may bear upon many points; or, to apply the palms of one or both of the thumbs in ſuch a manner that they ſhall at the ſame time ſupport the *fourchette*, or thin edge of the *perinæum*. But in firſt children, when, from the vehemence of the patient,

and

and the rigid ſtate of the parts, there is great reaſon to apprehend a laceration of the *perinæum*, then, occaſionally calling in the other means to our aid, we ſhall be able to give the moſt powerful and effectual ſupport, by applying the palm of the left hand, covered with a ſoft cloth, over the whole * temporary and natural *perinæum*, and the right-hand employed as was before mentioned, with a force ſufficiently firm to reſiſt the exertions of the patient during the violence of the pain. In this way we are to proceed till the parts are ſufficiently dilated, when the head may be permitted to ſlide through them in the ſloweſt and gentleſt manner; and we are never to quit our attention till it is perfectly cleared of the *perinæum*. Should there be any delay or awkwardneſs when the *perinæum* ſlides over the face, the fore-finger of the right-hand muſt be paſſed under its lateral edge, by which it may be cleared of the chin before the ſupport given by the left-hand is withdrawn. When the pains are exceedingly ſtrong, and the patient reſtleſs in her efforts, the head will ſometimes be expelled with wonderful velocity, in oppoſition to all the reſiſtance we are able to

* See *Chap.* II. *Sec.* II.

make;

make; but by this calm and ſteady proceeding we may be aſſured that we ſhall, under all circumſtances, wholly prevent, or greatly leſſen, all the evils to which ſhe would have been liable if our conduct had been different.

It is neceſſary to obſerve that theſe attempts to prevent the laceration of the *perinæum* produce ſome effect upon the head of the child, and upon the parts of the mother. In the application, therefore, of the reſiſting force we muſt not only be careful that the poſition of the patient is proper, and ſuch as will allow us to act with advantage, but that we do not make any injurious or partial preſſure; becauſe, if a partial ſupport be given to the *perinæum*, the head of the child is projected againſt an unſupported part, and the danger of a laceration is increaſed. The ſupport muſt be equally applied and uniformly exerted; and then there will be no greater prejudice done, than what might be occaſioned by the rigidity of the parts.

When the head of the child is expelled, perhaps the conſequences of an inſtant tranſition from extreme miſery to total freedom from pain, and to poſitive joy, are in no caſe, to which human nature is ſubject, more conſpicuous

ſpicuous and intereſting, though the delivery be not completed. It was formerly ſuppoſed neceſſary for the practitioner to extract the body of the child immediately after the expulſion of the head, leſt it ſhould be deſtroyed by confinement in this untoward poſition. But experience has not only proved that the child is not on that account in any particular danger; but that it is really ſafer and better, both for the mother and child, to wait for the return of the pains, by which it will ſoon be expelled; and a more favourable excluſion of the *placenta* will alſo by that means be obtained. In the courſe of a few minutes after the expulſion of the head, the action of the *uterus* returning, the ſhoulders of the child advance, and the external parts of the mother being again brought upon the ſtretch, the practitioner muſt place the fingers of his right-hand on each ſide of the neck, and at the ſame time with the left ſupport the *perinæum* with as much circumſpection as when the head was expelled; he muſt then conduct the body ſlowly in the direction of the *vagina*, till it is wholly extricated, though two or three pains are ſometimes required for the expulſion of the ſhoulders of the child after the head is born.

The child is to be placed in ſuch a ſituation that the external air may have free acceſs to its mouth, its head being covered; care being then taken of the mother we muſt proceed to tie the navel-ſtring in the manner recommended in the next ſection.

SECTION IX.

THE operation of tying and cutting the navel-ſtring when the child is born, though in itſelf of no great importance, was formerly thought to require ſo much ſkill and judgment as to give a profeſſional name to thoſe who are now called practitioners in midwifery. But every thing which relates to the treatment of the mother or child is of ſome conſequence; and even in trifling matters, there is a propriety of manner, the want of which may leſſen the eſtimation of every perſon's character.

It ſeems to have been a practice with the ancients to wait for a certain time after the birth of the child for the excluſion of the *placenta* before the navel-ſtring was tied or divided; if the child was born apparently dead,

dead, or in a very feeble ſtate, the *placenta*, when expelled, was laid upon its belly, as a reſtoring or comforting application. When the child revived but ſlowly, or when the ſigns of life declined, it became a cuſtom to lay the *placenta* on hot embers, * or to immerſe it in hot wine; and the heat thereby conveyed was ſuppoſed to ſtimulate the weak or decaying powers of life to more vigorous action. It has ſince been the practice to divide the *funis* immediately after the birth of the child; and the weaker this was, the more expedition it was thought neceſſary to uſe; for, the child being ſuppoſed to be in a ſtate ſimilar to that of an apoplectic patient, a certain portion of blood might by that means be diſcharged from the divided *funis*, and the imminent danger inſtantly removed. There is another method which I have ſeen practiſed, the very reverſe of the former; for in this, the loſs of any quantity of blood being conſidered as injurious, the navel ſtring was not divided, but the blood contained in its veſſels was repeatedly ſtroked from the *placenta* towards the body of the child. In all theſe different methods, and many others founded on

* See *Peu* Pratique des Accouchments, Livre I. Chap. xii. 18.

caprice

caprice or on directly contrary principles, children have been treated in different times and countries, and yet they have generally done well; the operations of Nature being very ſtubborn, and happily admitting of conſiderable deviation and interruption, without the prevention of her ends.

There is yet in all things a perfectly right and a wrong method; and, though the advantage or diſadvantage of theſe may be overlooked, the propriety and advantage of the right method muſt be evidently proved by individual caſes, and of courſe by the general reſult of practice. In this, as well as in many other points, we have been too fond of interfering with art, and have conſigned too little to nature, as if the human race had been deſtined to wretchedneſs and diſaſter, from the moment of birth, beyond the allotment of other creatures.

Perhaps the changes which take place in the body of the child, immediately after its birth, at leaſt the manner in which they are produced, are not perfectly underſtood at this time. * But we know if the child is in a healthy

* See *Peu* Pratique des Accouchments, Livre I. Chap. xii. 18.

healthy ſtate that it cries luſtily and continually, when the air ruſhes into its lungs, which are thereby expanded. This cry, which does not ſeem to be occaſioned by pain but ſurpriſe, is in its conſequences extremely important, as it is the cauſe of an exertion of all the powers of the child, and enables it to acquire a new manner of living, inconſiſtent with, and very different from, that which it poſſeſſed before it was born. But the change from uterine life, as it may be called, to breathing life, is not inſtantaneous, but gradual; and the uterine life continues till the breathing life is perfected, as is proved by the continuance of the circulation between the child and *placenta* for ſome time after it has cried. As the breathing life becomes perfected, the uterine life declines, and the manner of its declenſion may be proved by attending to the pulſation of the navel-ſtring, which firſt ceaſes at the part neareſt the *placenta*; and then, by ſlow degrees, nearer and nearer to the child, till at length it entirely ceaſes, ſo that the whole of the circulating blood ultimately reſides in the

xii. 18. And an Eſſay on the Treatment of Women in Childbed; written by my very ingenious and indefatigable friend Mr. *Charles White*.

body

body of the child, and the navel-ſtring becomes quite flaccid. It ſeems reaſonable to believe that the continuance of the uterine life after the birth of the child was deſigned for its preſervation from the accidents of its ſtate at that time; ſhould the acquiſition of its breathing life be by any cauſe retarded or hindered. If then the practice of tying or dividing the navel-ſtring the inſtant the child is born be followed, though it were before vigorous, it will in ſome caſes immediately decline, and, never acquiring its perfect breathing life, may in a ſhort time die: or, if the child were in a feeble or a dubious ſtate, poſſeſſing only that life which it had during its reſidence in the *uterus*, as by tying and dividing the navel-ſtring that life is deſtroyed before the breathing life is acquired, it muſt inevitably periſh. We may therefore ſafely conclude that the navel-ſtring of a new-born infant ought never to be tied or divided till the circulation in it has ceaſed ſpontaneouſly; nor would the child ſuffer, though the *funis* was never tied, if it was not divided.

With reſpect to the manner of tying the navel-ſtring there has alſo been much diffe-

rence of opinion, whether there ſhould be one or two ligatures, and in what part theſe ſhould be fixed. Two ligatures were adviſed on the preſumption that, by the end of the *funis* next the *placenta*, the maternal blood might be diſcharged, and the parent brought into great danger, as if there were two currents of blood circulating in the veſſels; and by ſome it was alſo ſuppoſed proper to uſe two ligatures, for the purpoſe of retaining the blood, preſuming that the *placenta* would be caſt off more commodiouſly, in the manner of a gorged leech. On the contrary, one ligature has been recommended, that we might have an opportunity of draining away as much blood as poſſible from the *placenta*, by the divided end of the *funis*, which was ſuppoſed to produce an advantage equal to the diminution of the bulk of the *placenta*, and to favour its expulſion. But, if the cuſtom of deferring to make the ligatures till the circulation in the *funis* ceaſes be eſtabliſhed, all this reaſoning in favour of one or two ligatures will fall to the ground. Yet, as there is a poſſibility in the caſe of twins, with a double *placenta*, of the child yet unborn loſing its blood by the divided *funis* of

that which is born, and from the habit of uſing them, on the whole, I prefer two ligatures, more eſpecially as no harm can ariſe from them, even if one ſhould be uſeleſs. As to the part where the ligature ought to be fixed it is of no real conſequence; becauſe the future ſeparation of the *funis* will not be made at the ligature, wherever that is fixed, but at a line, evidently marked, and cloſe to the belly of the child; and as to the materials uſed, provided they are not ſo thick as to be cumberſome, nor ſo thin as to cut the *funis*, it is all that is required.

In the courſe of ten or twenty minutes, and ſometimes longer, after the birth of the child, the circulation in the *funis* having ceaſed, and the *funis* itſelf become empty and flaccid, one ligature is to be fixed upon it about three inches from the belly of the child, and another at twice that diſtance, with ſo much force as to repreſs the circulation which may happen to return, and yet not ſo firmly as to divide it. The navel-ſtring may then be cut with a pair of ſciſſors between the two ligatures, and the child given to a careful aſſiſtant. It was formerly the cuſtom to divide the

funis under the bed-clothes; but, having once known a very deplorable accident happen from this cauſe, I make it a general rule to withdraw the child, that I may have an of opportunity of ſeeing when I tie or divide the *funis*.

SECTION X.

Soon after the birth of the child it is proper to apply the hand upon the *abdomen* of the mother, to aſcertain whether there be another child; or whether the *uterus* be contracting in a manner favourable to the ſeparation and excluſion of the *placenta*. Both the doctrines and cuſtoms of practice, regarding the management of the *placenta*, have been exceedingly different, even in common caſes; and though one method of proceeding may be more generally preferred and followed than the reſt, there is, in the management of the *placenta*, much diverſity in the conduct of individual practitioners, who may be ſuſpected to act ſometimes in a manner contrary to their

own judgment, in compliance with the prejudices of thoſe by whom they are employed. The minds of all women are full of ſolicitous fears till the *placenta* is brought away; and the ſooner this is done, after the child is born, the more they are gratified. But though the diſcovery of truth, and the fidelity of practice founded thereon, may not always be acceptable; yet in all practitioners, however deſirous of obliging, there muſt be ſome firmneſs of mind, ſome determination to act upon principle, or they will be perpetually involved in error, and led to do what may be productive of immediate or diſtant miſchief, in order to avoid the evil of preſent cenſure.

In the hiſtory which has been given of the former ſtages of a natural labour it appears, that all the paſſive changes which the parts undergo, and all the active powers exerted for producing theſe changes, are not only entirely independent of the will of the patient, but are fully equal to the end which they were deſigned to accompliſh without any aſſiſtance, which is no more wanted for the purpoſe of forwarding a natural labour than for any of the ordinary functions of the body. When we

have ſeen a child ſafely expelled by a proceſs beautiful, and regulated by the greateſt wiſdom, there ſeems to be no reaſon why we ſhould be apprehenſive of error or inability in thoſe powers, for the ſeparation or excluſion of the *placenta*, which is but an inferior and ſecondary part of the ſame proceſs; or why we ſhould not in this, as in all other caſes of medicine, be firſt convinced of the neceſſity of uſing art before we attempt to give aſſiſtance. On the proper management of the *placenta* the life of the patient may depend; and it is therefore fitting and neceſſary that our conduct ſhould be guided not by prejudice, but by the dictates of reaſon and experience.

After a natural labour, eſpecially with a firſt child, the pain which the patient has ſuffered, and the exertions by which the expulſion of the child was effected, will have occaſioned a proportionate degree of temporary fever, and ſhe will be in the ſame ſituation as if ſhe had undergone ſome exceſſive fatigue. By the birth of the child ſhe is freed from her ſuffering, and it muſt be our firſt employment to reſtore tranquillity to her mind, to calm the hurried circulation of the blood,

and

and to bring her as ſoon as we can into a quiet and natural ſtate. In the courſe of ten, and ſeldom of more than twenty minutes, the action of the *uterus* is again excited for the purpoſe of expelling the *placenta*, which is indicated by pain, leſs in degree, but in other reſpects like that of which ſhe complained when the child was expelled. It ſeldom happens that the *placenta* is either wholly ſeparated or expelled by the firſt pain, but when that has ceaſed for a few minutes it is again renewed; and, on examination, the *placenta* is often found deſcended, or deſcending, into the *vagina*, where it may with ſafety and propriety be ſuffered to abide till it is wholly expelled by a repetition of the pains. But if the *placenta* ſhould deſcend very ſlowly, or the patient be much diſturbed, the practitioner may take hold of the *funis* *, and by gently pulling in the time of a pain, and in a proper

* When the young has been a ſhort time expelled, carnivorous animals lay hold of the navel-ſtring with their teeth, in order to extract the *placenta*. It is probable that a woman in a ſtate of nature would, with her own hands, give ſomething like the ſame aſſiſtance; and in the force I uſe to bring down the *placenta*, I always bear in mind this circumſtance.

direction,

direction, favour its ſeparation and deſcent. But whether the *placenta* ſhould deſcend into the *vagina* ſpontaneouſly, or be brought down by the gentle aſſiſtance given, it ſhould be ſuffered to remain there till it is excluded by the pains; at leaſt it ſhould not be extracted before the hurry occaſioned by the labour is wholly compoſed, and the *uterus* has had ſufficient time to contract in ſuch a manner as to prevent any alarming hemorrhage. The *placenta* ſeldom remains more than one hour in this ſituation; but, if it ſhould not be excluded at the end of that time, we may again take hold of the *funis*, and, aiding the force of a pain, in the gentleſt and ſloweſt manner, bring the *placenta* through the *os externum*. We muſt be likewiſe cautious to bring down the membranes as perfectly as we can, that any *coagula* formed in the cavity of the *uterus* may be enveloped in them, and one principal cauſe of after-pain be removed. Then the patient, being put in a comfortable ſtate, and as little diſturbed as poſſible, may be left to her repoſe.

In this third ſtage of a labour many inconveniences and many impediments to the excluſion

ſion of the *placenta* may occur; the generality of which require a longer time to be given, and ſome the aſſiſtance of art, for the removal or prevention of danger. But of all theſe difficulties, and the means of giving relief, we ſhall ſpeak very fully when we come to the treatment of *Uterine Hemorrhages*.

END OF THE FIRST VOLUME.

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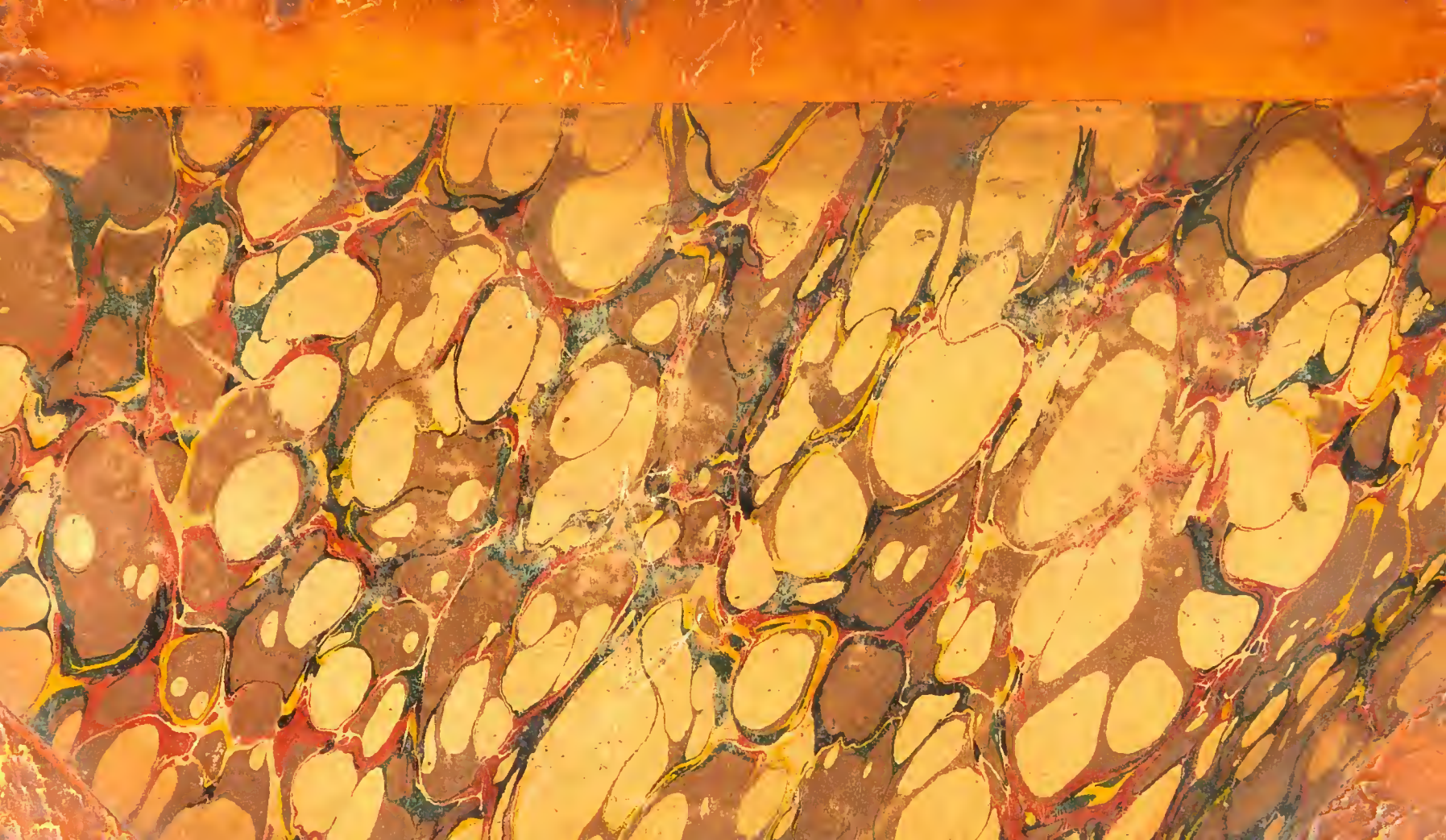
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